

Direct and Indirect Effects

Non-native invasive plants are discussed in a separate section. Table mountain pine is addressed under rare communities. The extent of shortleaf pine and pitch pine are discussed under forest cover.

Southern pine beetle

Risk of attack from southern pine beetle is most directly related to the density of pine stands. It also increases with age. This risk is naturally less as the hardwood component increases. Managers can control density, age, and species composition through vegetation manipulation activities. Thinning and/or regeneration harvest can alter all three of these factors. Thus, the best tool in reducing SPB risk is vegetation manipulation through various types of timber harvest. Those alternatives that regenerate and thin the most acres will most reduce the risk of southern pine beetle attack. Table 3-75 below summarizes the acres of regeneration and thinning harvest outputs resulting from modeling in Spectrum.

Table 3-75. Average annual acres of regeneration and thinning harvest in pine types over the next 50 years.

Activity	Alternative						
	A	B	D	E	F	G	I
Acres Regenerated	3,369	1,929	3,266	2,148	3,449	1,683	2,948
Acres Thinned	2,662	4,872	2,573	2,940	3,355	2,103	2,826
TOTAL	6,031	6,801	5,839	5,088	6,804	3,786	5,774

As the table shows, most of the alternatives are somewhat similar in the acres treated, with Alternative G being the notable exception. Alternative E also treats fewer acres than alternatives A, B, D, F, and I, being intermediate between alternative G and these other alternatives. Aside from the anticipated activities produced by the Spectrum model, a number of observations are apparent from the management prescription allocations in the different alternatives.

From these allocations, one would expect Alternative G to present the highest risk from southern pine beetle. It has the most extensive allocations of management prescriptions with low levels of active management. This will allow more forest to become increasingly dense, and leaves a larger acreage of older stands in place.

Alternative E is on the other end of the scale, with a large allocation to management prescription 8B2. Most of this area should be in a woodland condition: open park-like stands with very low densities. The extent of this allocation is probably beyond our ability to maintain the desired conditions.

Alternative B would be at low risk from SPB in the piedmont, but at very high risk in the mountains. It has a substantial acreage allocated to management prescription 8B2, but much less than Alternative E. Over time, its large 9G2 allocation in the piedmont would convert substantial acreages of pine stands to oak-hickory, mixed hardwood-pine and pine-hardwood conditions. In contrast to the piedmont, Alternative B would be at very high risk of SPB problems in the mountains. Management prescription 9H allows for very little regeneration, so most stands would become increasingly old unless natural processes replace them before harvest. The 9H desired condition does not address stand density.

Alternative I has a relatively small 8B2 allocation, but a sizeable 9G2 allocation. Alternatives A, D, and F should result in somewhat similar stand densities and species composition. If their desired conditions are achieved, most stands will be maintained at moderate densities and will not be at substantial risk.

Because insect populations have no regard for property boundaries, the risk in each alternative may affect adjacent property owners as well as the resources on National Forest lands.

Littleleaf disease

As previously stated, littleleaf disease is a concern in the piedmont. It could present a problem on sites where shortleaf pine is reestablished, but this activity should only be undertaken on well drained soils at lower risk from littleleaf disease.

Because loblolly pine and shortleaf pine become more susceptible to littleleaf disease as they mature, late successional stage acres in piedmont pine and pine/hardwood types are the measure used to associate the risk each alternative presents associated with littleleaf disease. This measure is also used because far more of the pine in the piedmont is loblolly pine than shortleaf pine; and loblolly pine is not as susceptible to littleleaf disease at intermediate ages as is shortleaf pine. In piedmont pine and pine/hardwood forest types, the late successional stage equates to age 60 or older. At this time, there are approximately 84,000 acres of pine and pine hardwood types in the piedmont that are this age.

Table 3-76 below displays the piedmont late successional stage acreage in pine or pine/hardwood types 50 years from now, as anticipated by the Spectrum linear programming model.

Table 3-76. Late successional stage acres in piedmont pine or pine/hardwood forest types, 5 decades hence.

Alternative						
A	B	D	E	F	G	I
16,283	76,178	17,951	58,395	3,860	82,784	38,797

Oak decline

As stated previously, oak decline risk factors include forest type (oak density), site productivity (site index), age, and stress factors such as spring defoliation and drought or combinations of these stresses. Of these, managers have no control over site productivity and/or drought and little control over defoliating insects. Attempts to suppress insect pests over the entire, or even a significant part, of the landscape can't be justified economically or environmentally. Thus, species composition (forest type) and age are the factors that managers can manipulate to alter the risk of oak decline. Thinning and/or regeneration harvests can alter species composition and only regeneration harvests can alter the age of a given stand. Thus, the most apparent tool for reducing oak decline risk is vegetation manipulation through various types of timber harvest.

Table 3-77 below displays regeneration and thinning harvest anticipated by the Spectrum linear programming model for upland oak and oak/pine forest types.

Table 3-77. Regeneration and thinning harvest in upland oak and oak/pine forest types over the next 5 decades.

Activity	Alternative						
	A	B	D	E	F	G	I
Acres Regenerated	29,169	16,054	33,337	16,704	40,504	2,795	19,948
Acres Thinned	775	6,644	1,071	495	3,075	2,996	1,292
Total	29,944	22,698	34,408	17,199	43,579	5,791	21,240

With the exception of Alternative F, oak decline risk will vary little by alternative in the piedmont. This is because a substantial proportion of the piedmont oak is near streams; and all of the alternatives except Alternative F include riparian corridors. Even under Alternative F, however, the oak and hickory component is to be expanded within management prescription 10B.

As one would expect with their management prescription allocations, Alternative F has the most regeneration, followed by Alternatives D and A. Oak decline risk would be highest for Alternative G, because it regenerates much less oak forest than the other alternatives.

Gypsy moth

Depending on the effectiveness of the Slow the Spread project, the general area infested by gypsy moth will reach the Sumter National Forest within the next 1-4 decades. However, outbreaks may occur on the Sumter from egg masses that are unknowingly imported into the area. This typically occurs when people move from the generally infested area to an uninfested area. Egg masses may be attached to belongings that are kept outside, and go unnoticed. Outbreaks may also occur when egg masses are attached to recreational vehicles that go from the generally infested area to the uninfested area.

Suppression and or eradication of gypsy moth populations would be permissible under all Alternatives. Once the generally infested area reaches the Sumter, the economic cost and concern for environmental impacts of widespread use of current treatment tactics, primarily the aerial application of insecticides, would result in only a very small amount of the forest receiving such management actions. Once the generally infested area reaches South Carolina, gypsy moth outbreaks on most forest lands will not be managed actively and population outbreaks will be brought to an end through the action of natural control agents (primarily by disease epidemics caused by fungal and viral pathogens). The impacts associated with treatments are well documented in the Final Environmental Impact Statement (FEIS) for Gypsy Moth Management in the United States: a Cooperative Approach. This document and associated Record of Decision (ROD) analyzes the impacts of various aerially applied pesticides on control of the gypsy moth, impacts to non-target organisms, as well as impacts to human health. The FEIS and ROD indicate that commonly used the use of suppression, eradication, and slow the spread treatments fully meet the USDA goal of reducing the adverse effects of the gypsy moth, addresses the major issues associated with gypsy moth and their treatment, and provides the greatest amount of flexibility in managing ecosystems affected by the gypsy moth. Means to avoid or minimize adverse non-target impacts due to gypsy moth treatment are discussed in Chapter 2 of the FEIS and have been adopted. The findings from this FEIS are hereby incorporated by reference. It should be noted that such treatments do nothing to alter the risk associated with a vegetative condition. They merely limit the pest.

Once established, gypsy moth impacts will be most significant for stands in the oak and mixed oak-pine forest types. Oaks are a favored host species and a primary indicator of the susceptibility of a stand to gypsy moth defoliation. Gypsy moth outbreaks may tend to be more frequent and the damage more severe in oak stands on parts of the forest where average rainfall is lowest. Gypsy moth outbreaks associated with severe spring droughts may lead to relatively high levels of mortality in affected oak stands (>15% mortality following a single year of severe drought and defoliation; >30% mortality following 2-3 years of severe drought and defoliation). Long-term losses following gypsy moth outbreaks will be more conspicuous on more xeric sites. Outbreaks that cause defoliation for 2-3 years in a row will lead to more severe levels of damage to affected stands and outbreaks that recur in the same stand after very short intervening time intervals will lead to greater levels of damage. Mast production may decline or fail in affected oak stands during and following gypsy moth outbreaks.

Factors that determine gypsy moth risk include forest type (oak density), site productivity (site index), age, and tree vigor. Tree vigor is generally reflected by stand condition (condition class) and age. Managers have no control over site productivity. Thus, species composition (forest type), stand condition, and age are the factors that managers can manipulate to alter the risk of gypsy moth impacts. Thinning and/or regeneration harvests can alter species composition and stand condition while only regeneration harvests can alter age of a given stand. Thus, the best tool in reducing the risk of receiving gypsy moth induced defoliation and/or mortality is vegetation manipulation through various types of timber harvest. Recall that it is unlikely that suppression/eradication efforts could be applied to large areas of the forest due to economic and environmental concerns.

Harvest of these stands in a timely fashion reduces the risk of gypsy moth induced impacts. Harvest can accomplish this goal by removing less vigorous trees during a thinning or other partial harvest. Regeneration harvest also has this effect by reducing stand age, thereby increasing stand vigor and ultimately reducing the vulnerability of the stand to gypsy moth induced mortality in the event of defoliation. The logical conclusion is that those alternatives that harvest more acres in upland oak and mixed oak-pine stands will have a more positive impact on reducing gypsy moth risk. Table 3-78 displays the estimated acres of regeneration and thinning in these forest types by alternative. These acres are based on Spectrum model runs. Note that this table is identical to the table shown in the previous section addressing oak decline. This is because the primary host for gypsy moth is oak, and proxies for tree vigor are the main measure of risk, just as for oak decline.

Table 3-78. Regeneration and thinning harvest in upland oak and oak/pine forest types over the next 5 decades.

Activity	Alternative						
	A	B	D	E	F	G	I
Acres Regenerated	29,169	16,054	33,337	16,704	40,504	2,795	19,948
Acres Thinned	775	6,644	1,071	495	3,075	2,996	1,292
Total	29,944	22,698	34,408	17,199	43,579	5,791	21,240

Hemlock woolly adelgid

Once infested by the adelgid, hemlocks are weakened, gradually lose their foliage, and are unable to refoliate or produce cones. Mortality occurs after complete defoliation, generally within 5 years of initial infestation (McClure 1987). There is no known genetic resistance to adelgids in either of the native Appalachian hemlock species, but resistance is known to occur in hemlocks native to Asia and in the two species native to the Western United States. Individual hemlock trees can be protected by spraying or soil treatments,

but such treatment is impractical for forest trees (Rhea 1996). It appears that all untreated hemlocks, with the possible exception of small geographically isolated populations, could eventually be killed by the adelgid. This impact would occur under all alternatives. Loss of hemlock will negatively impact riparian ecosystems and may result in a substantial decline in habitat quality for birds and other wildlife (Rhea 1996).

If adequate numbers of *Pseudoscymnus tsugae*, a beetle that preys on the adelgid, can be bred and released quickly over the next few years, then hemlock may be saved on the Sumter. Otherwise the outlook is dim. Effectiveness of *Pseudoscymnus tsugae* is uncertain, as are the numbers needed.

In the mountains, outside the natural range of loblolly pine, it is more susceptible to freeze and ice damage, and to pathogens. Converting these stands to more native species and mixed stands should result in healthier, more resilient forests. All alternatives except Alternative F convert all of the mountain loblolly pine stands over the next few decades.

For forest communities adapted to fire, prescribed fire is important to maintaining forest and ecosystem health. In the absence of somewhat frequent fire, natural succession can change the species composition of forests substantially. The largest acreages of prescribed burning are anticipated under Alternatives B and E, approximately 33,000 acres each year. Alternatives A, D, F, and I each look for around 20,000 acres of prescribed burning annually. Alternative G would expect about 10,000 acres of prescribed burning each year.

Cumulative Effects

Southern pine beetle is one of several factors that is having a cumulative effect on the extent of shortleaf pine, pitch pine and table mountain pine in the southern Appalachian Mountains. The direct and indirect effects above should be viewed in that light.

Effects of littleleaf disease are not cumulative with other ownerships. Few other land owners in the piedmont carry loblolly pine stands to the ages common on the Sumter National Forest.

When gypsy moth arrives in South Carolina, the cumulative effects on species of oak, birch and willow will be substantial. Given that there are large acreages of oak forest on private lands, however, the cumulative effect of management actions on the Sumter are not likely to be significant in this context.

Though the effects do not vary by alternative, the cumulative effect of the hemlock woolly adelgid on hemlock populations throughout the eastern United States is ominous. The adelgid infests hemlock regardless of ownership and active management or the lack thereof has no influence on the pest or its impacts on the host. The very sad fact is that hemlocks throughout the Appalachian Mountains are likely to continue to decline and die. The effectiveness of control efforts using the biological control *Pseudoscymnus tsugae* are likely to determine the future of eastern hemlock and Carolina hemlock.

The cumulative effect over time on the health of and reduction in fire adapted/dependent communities has been profound. The section on rare communities and habitats addresses this effect.

OTHER ELEMENTS

Recreation-Related Programs

Developed and Dispersed Recreation

Affected Environment

National forests provide over 191 million acres of public land within the United States. National forests in the Southern Appalachian region contribute approximately 4 million acres to the national total and provide unique settings for a variety of outdoor recreation activities such as primitive and developed camping, hunting, fishing, hiking, backpacking, horseback riding and OHV driving, canoeing/kayaking and whitewater rafting as well as picnicking, sightseeing, nature watching, walking for pleasure, and driving for pleasure.

Market Area

Market areas have been established for different national forests to better evaluate public demand for recreation opportunities. Researchers have defined a market area as all counties that fall within a 75-mile straight-line radius from a forest border. Past research has demonstrated that most national forest visits originate from within a 75-mile (1 ½ hour driving time) radius. (*Oconee and Sumter National Forests Recreation Realignment Report*, Overdevest and Cordell 2001).

The market area for the Sumter National Forest includes the market areas defined for the Oconee National Forest in Georgia. These market areas were combined in recognition of shared local markets and similar geography and demographic patterns. (Cordell 2001) The largest cities within this shared market area include Atlanta, Columbia, Greenville, Charlotte, and Knoxville. Opportunities for outdoor recreation are not limited to the national forests within the shared market area. The Great Smoky Mountains National Park and Blue Ridge Parkway connect and expand opportunities for recreation on federally managed public lands.

The location of the Sumter National Forest across the state of South Carolina makes it readily accessible to people in most of South Carolina as well as several surrounding states such as Georgia, North Carolina, and Tennessee.

The *1989-90 Public Recreation Facility Inventory of South Carolina* identified 1,050,366 acres of recreation facilities and resources within the state of South Carolina. The South Carolina state park system includes 48 state parks on 81,000 acres. The South Carolina Forestry Commission manages three state forests in South Carolina with a total of more

than 65,500 acres: Sand Hills State Forest, Manchester State Forest, and Harbison State Forest. The Department of Natural Resources manages 1.3 million acres of designated wildlife management areas in the state. These lands are a combination of public and private lands, including 364,000 acres of the Sumter National Forest. The South Carolina Department of Natural Resources also manages 43 state heritage preserves throughout the state.

South Carolina contains six national park sites and six national wildlife refuges totaling over 120,000 acres. The U.S. Army Corps of Engineers manages 325,000 acres of land and water along the Savannah River, including three large lake projects: Lake Hartwell, Lake Russell, and Lake Thurmond, all with large recreation areas.

There are many county recreation commissions, some of them offering recreation opportunities similar to those offered on the national forest such as picnicking, as well as more urban activities like basketball, tennis, soccer, and playgrounds.

South Carolina also has a vast amount of private recreation facilities. Because there is not a database available for these sites, they were not considered in depth. The Forest Service typically does not compete with private recreation facilities and often offers different opportunities and experiences. However, on occasion there is some overlap.

Sumter National Forest

South Carolina has over 600,000 acres of national forest, including the 350,000 acres on the Sumter National Forest. The Sumter National Forest consists of three ranger districts: the Enoree, Long Cane, and Andrew Pickens. Each district is unique in its recreation offering as well as its landscape.

- The Enoree Ranger District (161,500 acres) is located in central South Carolina, between Spartanburg and Columbia. The district has a very rural setting with national forest lands interspersed with pasture lands, croplands, industrial timberlands, and small communities. National forest lands in this area are not consolidated and often are adjacent to private lands. The recreation resources include campgrounds and primitive camps, rifle ranges, trails for a variety of uses (including off-highway vehicle use), interpretive opportunities, hunting, and several recreational fishing lakes. The statewide Mountains to the Sea Palmetto Trail will traverse this district when complete. Rose Hill State Park, a historic state park, is located in the middle of the district. An emphasis of this district is a premier network of trails for riding OHVs, horses, and mountain bikes, for hiking, and abundant opportunities for hunting and wildlife viewing.
- The Long Cane Ranger District (117,500 acres) is located on the western edge of the state, bordering Georgia. The district also has a rural setting and an unconsolidated land base. Small towns and communities dot the landscape. Forested lands, pastures, and private residences and industrial timberland coexist. The recreation resources on this district include developed campgrounds, primitive/seasonal camps, rifle ranges, trails for a variety of uses (including off-

highway vehicles), interpretive opportunities, and hunting and fishing opportunities. Several state parks are located within Sumter National Forest boundaries: Baker Creek State Park, Hamilton Branch State Park, and Hickory Knob State Park. Also, there are several Corps of Engineer projects along Strom Thurmond Lake, which borders the district to the west. A state scenic highway (State Highway 28/81) runs through the district and a National Heritage Corridor. An emphasis of this district is a premier network of trails for hiking, for riding OHVs, horses, and mountain bikes, as well as abundant opportunities for hunting and wildlife viewing.

- The Andrew Pickens Ranger District (79,500 acres) is located in the northwest corner of the state, bordering North Carolina and Georgia. The district is also rural in nature. Apple orchards and small residential complexes are common sights. The district's land base is much more consolidated than either the Enoree or Long Cane Ranger Districts. National forest land dominates the landscape with occasional private lands. The recreation resources include developed campgrounds, primitive/seasonal camps, several types of trails, the Chattooga Wild and Scenic River, a rifle range, and hunting and fishing opportunities. Hotspots on this district include the recreation use associated with the Chattooga Wild and Scenic River. The river is a main attraction and people flock to see it. One state park is within the forest boundaries, the Oconee State Park. Another large state park, Devils Fork State Park, is located just a few miles to the east of the forest. This district is located on the state lines for North Carolina, South Carolina, and Georgia and borders both the Chattahoochee National Forest and the Nantahala. These national forests also provide recreation settings and opportunities that affect recreation supply in the area. An emphasis of this district is the world-class Chattooga Wild and Scenic River related experiences and a variety of opportunities for sightseeing and remote experiences.

Recreation Demand and Trends

Recreation demand is a complex relationship between people's desires and preferences, availability of time, price, and availability of facilities. The evaluation of current and future demand for recreation on the Sumter National Forest is based on recent surveys that identify and quantify:

- Estimated number of current recreation visits to the Sumter National Forest.
- Participation rates for recreation activities within the forest market area.
- Future activity demand based on projected population growth and future participation rates.
- Activity demand by demographic strata.

The recent National Visitor Use Monitoring (NVUM) effort by the Forest Service has provided baselines for estimating current use of recreation sites on the Sumter National Forest. These numbers only account for people visiting developed or dispersed sites for

the purpose of engaging in a recreation activity. They do not include the millions of people who simply drive through the national forest.

Table 3-79. Current Recreation Use on Sumter National Forest

Types of Recreation Sites	Current Percentage of Total Estimated National Forest Recreation Visits
Day-Use Developed Sites	17%
Overnight-Use Developed Sites	6%
Wilderness (Dispersed Sites)	1%
General Forest Areas (Dispersed Sites)	76%
Total (679,029 visits estimated)	100%

Based on this NVUM data, developed recreation areas on the Sumter National Forest accommodate approximately 23% of the estimated recreation visits. The remaining 77% of recreation visits can be defined as dispersed recreation that occurs away from developed sites in general forest areas and designated wildernesses.

People within the defined market area for the Sumter National Forest engage in a variety of recreation activities. The following table lists the types of activities offered by the Sumter National Forest. Activities have been ranked in order from highest to lowest participation rates based on the National Survey on Recreation and the Environment (NRSE), an on-going national telephone survey sponsored by USDA Forest Service.

Table 3-80 identifies trends in public demand. Data reflect participation in an activity within the defined market area and not necessarily on the Sumter National Forest.

Table 3-80. Number of people (in millions) over 16 years old participating in recreation activities in Sumter NF market area and percentage increase over next 50 years (Oconee and Sumter National Forest Recreation Realignment Report, Overdevest and Cordell, 200, and from Outdoor Recreation in American Life, A National Assessment of Demand and Supply Trends, H. Ken Cordell, Principal Investigator, 1999)

Recreation Activity	2001 Participation Rate	2000 Number of People	2010 increase *	2020 increase *	2030 increase *	2040 increase *	2050 increase *
View/photograph nature or scenery	60%	5.44	15% 6.26	31% 7.13	48% 8.05	66% 9.03	86% 10.12
Driving for pleasure	54%	4.95	15% 5.7	31% 6.48	48% 7.33	66% 8.22	86% 9.21
Picnicking	53%	4.8	11% 5.33	23% 5.90	37% 6.58	53% 7.34	71% 8.21
Visit historic site	50%	4.55	22% 5.55	47% 6.69	77% 8.05	113% 9.69	155% 11.60

Swimming in streams, lakes, e	46%	4.17	6% 4.42	13% 4.71	20% 5.00	29% 5.38	41% 5.88
View wildlife	45%	4.11	15% 4.73	31% 5.38	48% 6.08	66% 6.82	86% 7.64
View natural vegetation, trees	44%	4.05	15% 4.66	31% 5.31	48% 5.99	66% 6.72	86% 7.53
View birds	32%	2.92	15% 3.36	31% 3.83	48% 4.32	66% 4.85	86% 5.43
Visit wilderness or primitive area	32%	2.9	25% 3.63	57% 4.55	96% 5.68	108% 6.03	171% 7.86
Day hiking	29%	2.62	19% 3.12	38% 3.62	59% 4.17	78% 4.66	94% 5.08
Warm water fishing	29%	2.62	9% 2.86	17% 3.07	24% 3.25	26% 3.30	26% 3.30
Motor boating	29%	2.6	1% 2.26	3% 2.68	6% 2.76	11% 2.89	17% 3.04
View/photograph fish	27%	2.43	15% 2.79	31% 3.18	48% 3.60	66% 4.03	86% 4.52
Developed Camping	21%	1.93	27% 2.45	60% 3.09	98% 3.82	144% 4.71	201% 5.81
Drive off-road	20%	1.76	5% 1.85	10% 1.94	16% 2.04	23% 2.16	34% 2.36
Mountain biking	18%	1.64	12% 1.84	26% 2.07	42% 2.33	61% 2.64	83% 3.00
Primitive camping	16%	1.44	-2% 1.41	0% 1.44	0% 1.44	5% 1.51	0% 1.44
Coldwater fishing	14%	1.28	9% 1.40	17% 1.50	24% 1.59	26% 1.61	26% 1.61
Rafting	12%	1.06	5% 1.11	9% 1.16	16% 1.23	30% 1.38	51% 1.60
Backpacking	11%	0.99	23% 1.22	57% 1.55	96% 1.94	108% 2.06	171% 2.68
Big Game Hunting	10%	0.89	97% 1.75	93% 1.72	89% 1.68	83% 1.63	76% 1.57
Small-game Hunting	9%	0.82	97% 1.62	93% 1.58	89% 1.55	83% 1.50	76% 1.44
Horseback riding on trails	8.3%	0.76	9% .83	19% .90	27% .97	30% .99	31% 1.00
Canoeing	8%	0.73	5% .77	9% .80	16% .85	30% .95	31% .96
Kayaking	3%	0.23	5% .24	9% .25	16% .27	30% .30	31% .30
Migratory bird hunting	2%	0.17	97% .33	93% .33	89% .32	83% .31	76% .30

*Data increase show change from 2001

Demographic information collected within the market area also revealed trends affecting recreation demand. Developed camping and swimming emerged as the most favored activities across the surveyed demographic groups. (*Oconee and Sumter National Forest Recreation Realignment Report*, Overdevest and Cordell 2001)

Another component of demand is the breakdown of the recreation activities across seven demographic categories. Below is a summary of the information presented in the *Oconee and Sumter National Forests Recreation Realignment Report* (Overdevest and Cordell, 2001):

- Age Category – Age affects the recreation activities in which a person participates. Currently, only the 35 to 44 age strata preferred day-use activity. Developed camping is one of this age group's favored activities.
- Gender – Gender is highly important in determining which activities people chose. However, neither male nor female listed day-use activities as a favorite. Hunting is a favorite among men and viewing birds and wildlife is a favorite among women.
- Household Size – The number of family members affects the activities they choose. For households of four or more, developed camping is a favorite. Swimming is a favorite for households of four. No other households mentioned day-use activities as a favorite.
- Race and Ethnicity – Shifting racial and cultural ethnicity is not pronounced in this area, but still a consideration. Asian Americans/American Indians list developed camping as one of their favorites.
- Income – Income is very much linked to recreation participation choices. Favorite day-use activities are developed camping for the \$40,000-\$49,000 income strata and swimming for the \$50,000-\$74,000 income strata.
- Urban and Rural – Urban populations are growing at a much faster rate than rural populations. Demand for urban population preferences would increase at higher rates. Urban population favorites include swimming and developed camping.
- Disability – A person's outdoor recreation activities are highly defined by disability status. Swimming is a favorite among people with physical disabilities.

The day-use activities most favored by more demographic groups are developed camping and swimming.

Recreation Opportunity Spectrum

Recreation Supply: For planning purposes, recreation supply is defined as the opportunity to participate in a desired recreation activity in a preferred setting to realize desired and expected experiences. Three components of supply are settings, activities, and facilities. (SAA, p.140) Recreationists choose a setting and activity to create a desired experience.

The USDA Forest Service manages a supply of settings and facilities.

The recreation opportunity spectrum (ROS) is a planning tool used to identify and evaluate recreation settings on the Sumter National Forest (Table 3-81). The entire national forest has been classified in five ROS classes: primitive (P), semi-primitive non-motorized (SPNM), roaded natural (RN1), and rural (R).

- Primitive (P) is the most remote, undeveloped recreation setting on the forest. These settings are generally located at least three miles from any open road and are 5,000 acres in size or larger. The primitive ROS class is limited to areas managed under the Wilderness Act on the Sumter National Forest. With few exceptions, the Wilderness Act prohibits the use of mechanized equipment for recreational use, personal rescue, resource protection, or trail construction and maintenance. Groups of visitors are often limited to a specific size to retain a sense of isolation and solitude.
- Semi-primitive non-motorized (SPNM) areas are less remote and can be as small as 2,500 acres and only a half-mile or more from any open road. These settings accommodate dispersed non-motorized recreation.
- Semi-primitive motorized (SPM) areas are less remote and can be as small as 2,500 acres and only a half-mile or greater from any open road. These settings accommodate dispersed motorized recreation.
- Roaded natural (RN) settings are located within a half-mile of a road and usually provide higher levels of development such as campgrounds, picnic areas, and river access points.
- Rural settings represent the most developed sites and modified natural settings on the forest.

Table 3-81. Current Distribution of ROS Classes on the Sumter National Forest

Recreation Opportunity Spectrum (ROS) Classes	National Forest Lands	Current Inventory* (Acres)
Wilderness/Primitive (P)	1%	4,800
Semi-Primitive Non-Motorized (SPNM)	2%	6,000
Semi-Primitive Motorized (SPM)	0%	150
Roaded Natural (RN)	97%	353,150
Rural (R)	<1%	600
Total	100%	364,700

**This is based on the following: wilderness includes the designated and recommended wilderness areas, semi-primitive non-motorized acres includes inventoried roadless areas, and the rural acres include the developed recreation sites/areas.*

The Southern Appalachian Assessment Social, Cultural, Economic Technical Report (SAA) states that in the Southern Appalachian region, approximately 45% of the region is in rural settings, 24% in roaded natural, 18% in urban, suburban, or transitional settings, 8% in primitive or semi-primitive. This indicates that primitive and semi-primitive are in shorter supply than the rural or roaded natural settings.

Developed Recreation

A developed site is a discrete place containing a concentration of facilities and services used to provide recreation opportunities to the public and evidencing a significant investment in facilities and management under the direction of an administration unit in the National Forest System. Recreation sites are developed within different outdoor settings to facilitate desired recreational use. Developed recreation sites include such facilities as campgrounds, picnic areas, shooting ranges, swimming beaches, and historic sites.

Developed recreation sites provide different levels of user comfort and convenience based on the assigned ROS setting. Development Levels range from 1 to 5, with level 1 representing the most primitive, natural settings with minimal or no site amenities. Level 5 represents the highest level of development with fully accessible facilities.

General descriptions of development levels are described as:

- Development Level 1 – Minimum site modifications, rustic or rudimentary improvements designed for the protection of the site rather than comfort of the users. Generally not found in developed recreation sites.
- Development Level 2 – Minor site modification, mostly rustic materials, primitive motorized access. An example of a development level 2 site is Key Bridge Seasonal Camp.
- Development Level 3 – Moderate site modification for comfort of users as well as protection of the site, synthetic materials used, roads may be paved and trails formalized. Examples of development level 3 sites include Sloan Bridge Picnic Area and Indian Creek Shooting Range.
- Development Level 4 – Heavy site modification, many amenities for public convenience, synthetic materials common, motorized access by high standard roads. Examples of development level 4 sites include Whetstone Campground and Parson's Mountain Campground.
- Development Level 5 – High degree of site modification, many amenities and some luxury for public convenience, landscape may contain non-native plants, formal paved walkways in addition to highway access. The Sumter National Forest doesn't have development level 5 sites.

Supply of Developed Recreation Sites: The Forest Service defines the capacity of developed recreation sites in terms of "people at one time" a site can support (PAOT). Forty-three developed sites are currently managed by the Sumter National Forest to accommodate different recreation activities. Tables 3-82 and 3-83 illustrate the different types of facilities provided across the forest and their current capacity in PAOT. See Appendix B for a description of the NVUM process and discussion of recreation visits by alternatives over time.

The following tables display the existing PAOT by development level and by site type. This helps describe the existing capacity the forest has at its recreation sites. (Table 3-82

does not include the PAOT for trailheads and for boat launches. They are better indicators for dispersed recreation and will be discussed in that section. It does include PAOT from developed camping, picnicking, swimming, rifle ranges, and interpretive sites.)

Table 3-82. Current Capacity of Day-Use Developed Sites (DUDs)

Type of Day Use Developed Site	Total Number of Sites	Total Capacity (PAOT)
Picnic areas	11	695
Beaches & swimming areas	2	150
Shooting ranges	7	115
Parking areas, overlooks, and historical sites	3	417
Total Day-Use Capacity	23	1,377

Table 3-83. Current Capacity of Overnight-Use Developed Sites (OUDs)

Type of Day Use Developed Site	Total Number of Sites	Total Capacity (PAOT)
Level 1 Campgrounds	0	0
Level 2 Campgrounds	4	490
Level 3 Campgrounds	14	1,625
Level 4 Campgrounds	2	215
Total Overnight Capacity	20	2,330

Hotspots for developed sites on the Sumter National Forest are minimal.

Dispersed Recreation (Motorized and Non-motorized Use)

Dispersed recreation is defined as those activities that occur outside of developed recreation sites such as boating, fishing, hiking, and biking. There are 20 developed recreation sites that facilitate dispersed use of the forest with amenities such as trailheads and boat ramps. (Tables 3-84, 3-85, 3-86, and 3-87)

Table 3-84. Developed Access Points for Dispersed Recreation

Type of Developed Site	Existing Number of Sites	Existing Capacity (PAOT)
Trailheads	9	375
River Access Points	14	430
Lake Boat Ramps	7	225
Fishing Sites	5	N/A
Total	35	1,030

Table 3-85. Miles of Non-Motorized Trails on Sumter National Forest

Type(s) of Non-Motorized Use Allowed	Existing Miles of Designated Trails
Hike only	72
Hike and Mountain. Bike only	24
Hike and Equestrian only	21
Hike, Mountain Bike, and Horse only	57
Paddle Sport	125
Total	299

Table 3-86. Miles of Motorized Trails

Type(s) of Motorized Use Allowed (mountain bikes and hiking also allowed)	Existing Miles of Designated Trails
Motorcycle/OHV only	46.0
Total	46.0

Table 3-87. Acres of Current Wildlife/Game Habitat Emphasis Areas

Type of Fish & Wildlife Habitat Emphasis	Unit of Measure
Woodland/Savanna Habitat	3,000 acres
Permanent Openings	12,900 acres
Early Successional Forest Habitat	42,400 acres
Stocked (Put & Take) Streams	67.8 Miles of Streams
Stocked (Put & Take) Reservoirs	13,600 Acres

*Woodland/Savanna habitat includes the prescription 8B2. Permanent openings include habitat associated with closed roads, traditional wildlife openings and linear strips such as ROWs and utility corridors. Early Successional forest habitat includes Prescription Areas 7E2, 8A1, 9G and 10B

The hotspots of dispersed recreation on the Sumter include the high weekend use of the OHV trailheads and trail systems on the piedmont districts.

Direct and Indirect Effects

Existing recreation demand is expected to grow for a variety of activities including dispersed and developed recreation (see Table 3-80). Existing use on the national forest will increase as recreation demand and populations grow over the next 10 years. No changes to existing wilderness designation (1A).

General themes were developed for Alternatives A, B, D, E, G, and I that emphasize different resource management objectives. Alternative F is the current management alternative and will provide the baseline for evaluating other alternatives. Each alternative theme and its allocation of prescription areas provide the parameters for redefining the current distribution of the recreation opportunity spectrum, as well as facility scale and development. Road management direction and the emphasis placed on recreational use, either dispersed or developed, were major factors in determining the effects of each alternative to recreation.

National forest management could affect recreation by constructing or removing recreation facilities and improvements; changing development levels; restricting, prohibiting, or encouraging use; altering the land to make it suitable or unsuitable for use; and changing the landscape setting. Evaluation of potential recreation effects requires that these elements be considered: activities, setting, and experiences.

Refer to other sections of the FEIS for additional recreation environmental consequences related to Scenery, Wild and Scenic Rivers, Wilderness, Roadless Areas, and Special Areas.

Recreation Opportunity Spectrum

Table 3-88 displays the estimated distribution of acres of ROS classes by alternative.

Table 3-88. Estimated Distributions of ROS Classes by Alternative

ROS Class	Alt. A	Alt. B	Alt. D	Alt. E	Alt. F*	Alt. G	Alt. I
Primitive (P)	10,493	9,923	4,961	7,938	5,136	9,148	4,837
Semi-Primitive Non-Motorized (SPNM)	4,462	5,011	5,872	7,036	3,275	37,940	3,290
Semi-Primitive Motorized (SPM)	16,669	8,992	6,227	41,416	161	202	5,153
Roaded Natural (RN)	328,865	336,563	343,429	304,099	351,917	313,199	347,209
Rural (R)	600	600	600	600	600	600	600
Not Inventoried (water, etc.)	1,761	1,761	1,761	1,761	1,761	1,761	1,761
Total	362,850	362,850	362,850	362,850	362,850	362,850	362,850

*Based on the prescriptions, not on existing inventory.

**Areas designated (recommended) as wilderness are managed for primitive (P) recreation opportunity.

All alternatives contain a variety of recreation opportunity spectrum settings from the most primitive to more developed. However, the emphasis in some alternatives is to provide recreation opportunities in settings that are more remote and less developed, such as semi-primitive non-motorized. The acres of primitive, semi-primitive or more remote settings are greatest in Alternatives E and G. Effects of this change in settings will be positive for those visitors seeking a more remote experience and less positive for those visitors who prefer a more developed experience. The acres of semi-primitive or more remote settings are the least in Alternatives D, F, and I. Alternatives A and B all have moderate increases in remote settings and opportunities. Acres for more developed settings are greatest in Alternatives D, F, and I. Acres for more developed settings are moderate in Alternatives A, B, and G. Acres for more developed settings are least in Alternative E.

Increasing remote settings may be associated with road closures in some areas, both seasonal and permanent. The effects of road closure decrease access by motorized vehicles. Closing roads increases the satisfaction of visitors who prefer solitude and fewer disturbances (such as dust and noise) by motorized vehicles. Road closure often reduces wildlife poaching and littering.

Developed Recreation

Table 3-89 shows that Alternatives B, D, F, G and I and have little to no change in the amount and capacity, or development level of developed recreation sites on the forest, but do emphasize changes to upgrade the accessibility of existing sites, which are considered high priority improvements.

Table 3-89. Estimated Increase in Capacity of Developed Recreation Areas by Alternative (PAOTs)

Type of Development	Alt. A	Alt. B	Alt. D	Alt. E	Alt. F*	Alt. G	Alt. I
Day-Use Areas	Low	Low	Low	Low	Low	Low	Low
Level 2 Campgrounds	Low	Low	Low	Low	Low	Low	Low
Level 3 Campgrounds	Decrease	Low	Low	Decrease	Low	Low	Low
Level 4 Campgrounds	High	Low	Low	High	Low	Low	Low

*Baseline = Alternative F, Existing Developed Recreation PAOTs (Tables 3-82 & 3-83)

Low Increase = < 5% increase in existing PAOTs

Moderate Increase = 6-25% increase in existing PAOTs

High Increase = > 26% increase in existing PAOTs

Decrease = any decrease in existing PAOTs

PAOTs increase in Alternatives A and E. Effects include a greater satisfaction for users of all abilities as more sites become accessible. However, with limited capacity increase, some sites that will be increasingly overused and crowded at peak times, such as holidays

and weekends, may lower satisfaction for some visitors. Use will reach capacity more often over time and some visitors will have unmet expectations.

Some activities/actions will affect developed recreation and effects will depend on the proximity and magnitude of the activity. These activities include construction, reconstruction and maintenance of roads and trails, vegetation management (including thinning, conversion, regeneration, insect and disease control, prescribed burning and pesticide use), and mineral exploration. Some activities, such as prescribed burning or pesticide use, have short-term effects that decrease for a short time the satisfaction of visitors in the area. Other activities such as road construction or insect and disease control may influence satisfaction on a long-term basis. Other natural causes such as wildfires or tornadoes can greatly affect developed recreation areas long-term or permanently.

The allocation of lands to wilderness will affect all mechanical and motorized transport forms of recreation, such as mountain bike riding, according to the Wilderness Act of 1964. Also, with additional designations of wild and scenic rivers, increased public interest would result in more river use for canoeing, camping, and fishing. Opportunities for fishing and hunting may be reduced.

Hotspots of developed recreation are sites that are consistently at or over their design capacity on certain weekends and holidays. Hotspots of use for developed recreation will continue to be more and more crowded over time as use continues at these popular places. Upgrades of facilities, visitor use controls, and implementation of fees often help control use and overuse at these sites.

Dispersed Recreation

Table 3-90 displays the estimated increase in non-motorized trails by alternative. Table 3-91 displays the designated OHV areas by alternative. Table 3-92 displays the estimated change in motorized trails by alternative.

Table 3-90. Estimated Increase in Non-Motorized Trails by Alternative

Type of Trail	Alt. A	Alt. B	Alt. D	Alt. E	Alt. F*	Alt. G	Alt. I
Hike only	Low	Low	Low	Low	Low	Low	Low
Hike and Bike only	High	Low	Low	High	Low	Low	High
Hike and Equestrian only	Low	Low	Low	Low	Low	Low	Low
Hike, Bike and Equestrian only	Moderate	Low	Low	Moderate	Low	Low	Moderate
Paddle sports	Low	Low	Low	Moderate	Low	Low	Low

Baseline = Alternative F, Existing Miles of Trail

Low increase = < 5% increase of existing miles of non-motorized trail (0 to 15 miles)

Moderate increase = 6-25% increase of existing miles of non-motorized trail (16 to 75 miles)

High increase = > 26% increase of existing miles of non-motorized trail (over 75 miles)

Decrease = any net loss of existing trail

Table 3-91. Designated OHV Areas (in acres) by Alternative

Type of Motorized Use	Alt. A	Alt. B	Alt. D	Alt. E	Alt. F*	Alt. G	Alt. I
7C Designated OHV Area	3,500	0	0	3,500	0	0	0

Table 3-92. Estimated Change in Motorized Trails by Alternative

Type(s) of Motorized Use Allowed	ALT A	ALT B	ALT D	ALT E	ALT F	ALT G	ALT I
Motorcycle/ATV and Mountain Bike	High	Low	Low	High	Low	Low	High

Baseline = Alternative F, Existing Miles of Motorized Trail

Low increase = < 25% increase of existing miles of trail (0-12 miles)

Moderate increase = 11-50% increase of existing miles of trail (13 to 25 miles)

High increase = > 50% increase of existing miles of trail (over 25 miles)

Alternatives A and E increase most trail systems due to the emphasis of those alternatives on recreation. Increases include hiking, mountain biking, horseback riding, and motorized OHV trails. Some users may experience user conflicts on increased trails. Those alternatives that increase the trail system will reduce some of the unauthorized off-trail use. Increases in the trail system will also have effects of more litter, safety concerns, law enforcement needs. Alternatives B, D, E, F, and G keep the current trails system. This can lead to resource impacts if there is significant unmet demand for that particular activity.

There are no planned increases in hiking-only trails in any alternative. This can lead to overuse and resource impacts if there is substantial unmet demand for trails that allow only hiking. There are several alternatives where hiking is combined with mountain biking and equestrian trails that will meet some of the demand for increased hiking opportunities. Tables 3-90, 3-91, and 3-92 display the allocation by alternative to trails.

Increases in equestrian trail opportunities will increase the recreation experiences of recreationists who enjoy that sport; additional trails add to their experience variety, flexibility, and access to different parts of the forest. The greatest increases in equestrian trails occur in Alternatives A, E, and I. Alternatives B, D, G, and F do not propose any new equestrian trails. This can lead to overuse and resource impacts if there is substantial unmet demand. Also, equestrian trails are often multiple use, allowing hiking and mountain biking on the same trails. Occasionally, this can lead to user conflicts. Tables 3-90, 3-91, and 3-92 display the allocation by alternative to trails. Cross-country equestrian trail use is allowed in Alternatives A, D, F, G and I; effects of this activity include resource impacts when a user-created trail develops. The satisfaction of some horseback users is greater if horseback riders are allowed off-trail where there is a sense of freedom. However, other forest visitors' satisfaction is decreased when resource impacts from these cross-country horse users affect their experience. In Alternatives B and E, equestrian use is not allowed off-trail. The effects of this activity include fewer resource impacts because fewer user-created trail develop. It is easier to enforce rules and regulations relating to not damaging the resources. Most forest visitors' satisfaction is increased when resource impacts from these cross-country horse users are minimized.

Increases in OHV trail riding opportunities will increase noise disturbance and may lessen the recreation experience of other recreation participants such as hikers, hunters, fishermen, campers, and those seeking solitude. Increases in OHV trail riding opportunity will improve the recreation experiences of recreationists who enjoy that sport; additional trails add to their experience variety, flexibility, and access to different parts of the forest. Tables 3-90, 3-91 and 3-92 display the allocation by alternative to trails.

Increases in mountain bike opportunities will increase the recreation experiences of recreationists who enjoy that sport; additional trails add to their experience variety, flexibility, and access to different parts of the forest. The greatest increases in mountain bike trails occur in Alternatives A, E, and I. Alternatives B, D, G, and F do not propose any new mountain biking trails. This can lead to overuse and resource impacts if there is substantial unmet demand. Also, mountain bike trails are often multiple use, allowing hiking and equestrian use on the same trails. Occasionally, this can lead to user conflicts. Tables 3-90, 3-91, and 3-92 display the allocation by alternative to trails.

Increases in interpretive trails (which are usually on existing hiking trails) enhance experiences for most visitors. Also, by sharing information about ecosystems, history, and resource management through interpretation, better-informed visitors often result in good partners in management.

Alternatives A, E, and I increase dispersed recreation access points, such as boat ramps and trailheads, the greatest. Increases in dispersed recreation access points may include greater user satisfaction for some users, higher use for trails, and easier access to different parts of the forest for some users.

Alternatives that allocate additional acres to big and small game emphasis areas will increase the hunting and wildlife viewing experiences. Table 3-93 displays the allocation by acres by alternative to these areas.

Table 3-93. Estimated Total Acres (Total for 1st Decade) of Wildlife Emphasis by Alternative

Type of Game Habitat*	ALT A	ALT B	ALT D	ALT E	ALT F	ALT G	ALT I
Woodland/Savanna Habitat	7,200	13,700	6,800	22,700	2,800	3,700	7,400
Permanent Openings	6,300	5,500	7,300	8,100	9,100	5,400	6,800
Early Successional Forest Habitat	39,000	16,100	35,100	23,400	45,000	16,100	31,900
Total	52,500	35,300	49,200	54,200	56,900	25,200	46,100

*Woodland/Savanna habitat includes the prescription 8B2. Permanent openings include habitat associated with closed roads, traditional wildlife openings and linear strips such as ROW's and utility corridors. Early Successional forest habitat includes Prescription Areas 7E2, 8A1, 9G and 10B.

Some alternatives emphasize hunting, fishing, and non-consumptive wildlife opportunities more than others. Effects of this emphasis will include increased opportunities for hunting, fishing, and non-consumptive wildlife viewing on some parts of the forest. Alternatives F, D, E, A, and I had the largest amount of acreage in those habitats. Acres of habitat management for big and small game hunting are least in Alternative G; Alternative B is in between. Increases in hunting habitat will increase the user satisfaction for visitors in some areas. Effects on hunters, both small and big game, will generally be positive. Some specific areas on the forest will not be managed for game species that were in the past; this will affect hunters more negatively by decreasing the places or the success ratio. Some areas will be managed differently than in the past and hunter satisfaction may increase in those areas. Hunting decreases the satisfaction of some other users, especially some trail users, due to safety concerns. To avoid safety concerns, effects may include a decrease in use on certain trails during the hunting season. Hunting is not allowed on Sundays during the hunting season; use in the general forest area, including trails, may be higher during those days

The quantity of stocked (put and take) streams and reservoirs are not expected to change over alternatives. Some areas may become more accessible based on increased access

from trails and roads in Alternatives A, E, and I; in Alternatives B and G, access may be decreased.

Wilderness and Roadless Areas

Affected Environment

Wilderness

Congressionally designated wildernesses are protected by law and valued for their ecological, historical, scientific, and experiential resources.

Currently on the Sumter National Forest, there is one designated wilderness (Table 3-94). Ellicott Rock Wilderness is shared among three national forests – the Sumter, the Nantahala, and the Chattahoochee. The combined acreage for the entire wilderness area is 8,271 acres. Ellicott Rock Wilderness has 2,856 acres on the Sumter. On the Sumter National Forest, this represents less than 1 percent of the total forest acreage. The existing wilderness area will be managed to maintain the area's natural characteristics. Natural occurrences such as outbreaks of insects or disease are allowed as part of the natural cycle. Human-caused intrusions are not allowed. Under emergency conditions, mechanical equipment and motorized transport may be approved for use to control fire which threatens life, property, or the wilderness resource. The Sumter National Forest contains one recommended wilderness study area that has not been acted upon by Congress – Ellicott Rock Extension (1,982 acres.) Areas that are designated as wilderness are managed for a primitive recreation opportunity.

Annual use in Ellicott Rock (the South Carolina portion only) is about 11,590 visits per year, or about 1% of total visitor use on the forest.

Table 3-94. Existing Designated Wilderness Areas

Name	Acres	Designated Wilderness Area	Recommended Wilderness Area
Ellicott Rock	2,856	Yes	NA
Ellicott Rock Extension	1,982	NA	Yes

Roadless

The first step in the evaluation of potential wilderness is to identify and inventory all roadless, undeveloped areas that satisfy the definition of wilderness found in Section 2 (c) of the 1964 Wilderness Act (FSH 1909.12, Chapter 7, Item 7.1). Roadless areas are places that have retained or are regaining a natural, untrammeled appearance; any signs of prior human activity are disappearing or being muted by natural forces. One criteria

provides for an individual roadless area to include no more than one-half mile of improved road for each 1,000 acres.

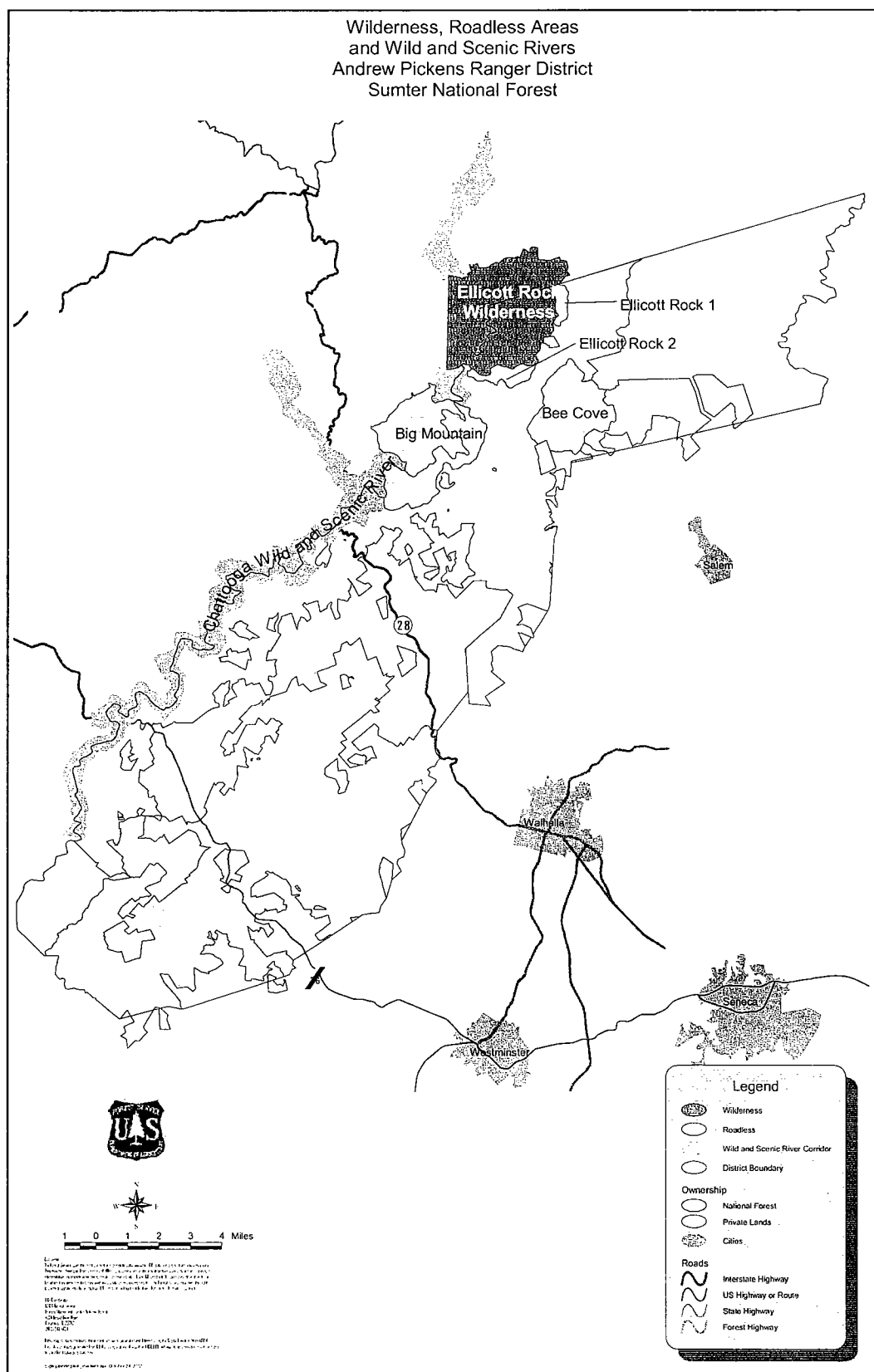
In the forest planning process, national forests are required to assess roadless areas (Chapter 7 of FSH 1909.12). A new roadless inventory was conducted as part of the Southern Appalachian Assessment, with additional guidelines developed by the SAA team and Forest Service Region 8/Atlanta, to facilitate consistent application of the process.

Through that process, the Sumter National Forest currently has four inventoried roadless areas totaling approximately 6,161 acres that could be recommended for wilderness study (Table 3-95). One of the areas is shared with the Chattahoochee National Forest.

*Table 3-95. Roadless areas and approximate acreages**

Roadless Area	Acres
Bee Cove	2,999
Big Mountain (SC portion only)	2,332
Ellicott Rock I	300
Ellicott Rock II	530
Total	6,161

**Source: The South Appalachian Assessment, Social/Economic Report*



For each roadless area, a report was prepared that evaluates its wilderness potential. These reports are found in Appendix C and are in accord with 36 CFR 219.17. The evaluation reports consider wilderness potential in three main categories: capability – the qualities that make a roadless area suitable or not suitable for wilderness; availability – an assessment of the non-wilderness resources and demand of the area; and need – a consideration of the amount of wilderness already in the area and region.

Outdoor recreation is one of the benefactors of wilderness and is one of the drivers of wilderness demand and wilderness management. According to trend data collected from 1965 to 1994, the trend in recreation visits to national forest wilderness has paralleled designations and increased over time. In the southeast, participation rates and trends in wilderness indicate a continued increase in visitation to wilderness with an estimated 7,860,000 visits to wilderness by the year 2050 (see Table 3-80 in Developed and Dispersed Recreation).

It is important to understand when analyzing wilderness and roadless allocations, that in addition to outdoor recreation in wilderness, there is a non-user component that values American wilderness. Wilderness is valued for preserving representative natural ecosystems and local landscapes. The very existence of wilderness is valued by the American public as part of the natural heritage of the country. The *National Survey on Recreation and the Environment*, 2000, found that 69.8% of those surveyed agreed or strongly agreed to the question, “How do you feel about designating more federal lands in your state as wilderness?” Over 96% agreed or strongly agreed with the statement, “I enjoy knowing that future generations will be able to visit and experience wilderness areas.”

Direct and Indirect Effects

Wilderness

Wilderness has many positive effects. As stated above, wilderness preserves natural systems and provides places of solitude for visitors. However, there are environmental effects within wilderness from many sources. Recreational use can have negative impacts to the quality, character, and integrity of the wilderness resource due to overuse. Some of these negative impacts include soil compaction; vegetation loss, disturbance and/or replacement by non-native species such as noxious weeds on trails and campsites caused by heavy recreation use; crowding and loss of solitude; deterioration of water quality from improper disposal of human waste and waste water; and loss of or threats to biological/ecological processes and biodiversity, through human disturbance.

Other environmental effects which impact the integrity of the natural systems in wilderness include air pollution from outside sources, interruption of natural functioning ecosystems by fire suppression, and threats to native plant species from the spread of noxious weeds from sources outside wilderness.

No significant new management direction is being proposed for existing designated wildernesses on the forest under any of the alternatives, so there are no significant direct, indirect, or cumulative effects to the existing wilderness resource. Expansion to existing wilderness is proposed by allocating adjacent lands to wilderness study areas; for discussion of effects, see the Roadless section that follows.

Roadless

Both the decision to designate wilderness study areas and the decision not to designate wilderness study areas have environmental consequences. The magnitude of the effects varies by alternative depending upon the number of roadless areas assigned.

Three categories are used to summarize how each roadless area is allocated in the alternatives. These categories are: recommended wilderness study (W), roadless areas maintaining roadless characteristics (R), and roadless areas not maintaining roadless characteristics (N). Table 3-96 summarizes all roadless area allocations by category across the alternatives.

Table 3-96. Roadless area allocation by alternative (percentage of the area)

Roadless Area	Alt. A	Alt. B	Alt. D	Alt. E	Alt. F	Alt. G	Alt. I
Bee Cove	W 100 %	W 100 %	N 100 %	W 100 %	N 100 %	W 100 %	R 100 %
Big Mountain (SC portion)	R 97 %, N 3 %	W 100 %	R 97 %, N 3 %	R 97 %, N 3 %	R 100 %	W 100 %	R 100 %
Ellicott Rock 1	W 100 %	W 100 %	W 100 %	W 100 %	W 100 %	W 100 %	W 100 %
Ellicott Rock 2	W 100 %	W 100 %	W 100 %	W 100 %	W 100 %	W 100 %	W 100 %
Total % for all Areas	W 99 % N 1 %	W 100 %	W 13 % R 37 % N 50 %	W 99 % N 1 %	W 13 % R 38 % N 49 %	W 100 %	W 13 % R 87 %

W=Recommended Wilderness Study

R=Roadless Areas Maintaining Roadless Character

N=Roadless Areas Not Maintaining Roadless Character

Recommended Wilderness Study

Designation as wilderness study areas would preserve additional areas that would be managed to allow natural processes to occur, provide areas for solitude and primitive recreation, and minimize the impacts of humans and their activities on the land. These areas would be islands within the forest where the naturalness, uniqueness, and representative ecosystems of the designated areas would be maintained. The highest priority for management would be to manage for the naturalness of the area.

Roadless areas recommended for wilderness study are set aside for future designation as wilderness and are not available for activities such as vegetation management or road construction. These areas are managed much the same as designated wilderness until a final determination is made by Congress as to whether they will be added to the National Wilderness Preservation system. Roadless areas recommended for wilderness study are displayed in Table 3-97. All the inventoried roadless areas are in the same ecosystem: Central Appalachian broadleaf-coniferous forest meadow province, Blue Ridge section, Southern Blue Ridge Mountains subsection. This ecosystem is represented currently by designated wilderness on the forest as well as those that would potentially be added after wilderness studies are completed.

Table 3-97. Numbers of Acres Allocated to Recommended Wilderness Study by Alternative

Roadless Area	Alt. A	Alt. B	Alt. D	Alt. E	Alt. F	Alt. G	Alt. I
Number of Areas	3	4	2	3	2	4	2
Acres	7,638	7,068	2,106	5,083	2,281	6,293	1,982

Direct effects of managing wilderness study areas include maintaining soil, hydrologic, and atmospheric conditions prevailing in the areas. Roads will be closed and rehabilitated or allowed to return to natural state. Water quality and air quality should remain high and the imprint of human influence will not increase or will diminish over time.

Opportunities for solitude and remoteness will increase as will the opportunity for primitive and unconfined recreation due to road closures and prohibited motorized use. Non-motorized dispersed recreation activities such as hiking, horseback riding, camping, fishing, and hunting would continue and use-levels would be expected to remain about the same as current levels. Visual and experiential contrasts between roadless areas and other timbered lands will increase. Additional acreage for wilderness study will increase the carrying capacity and allow for user impacts to be dispersed across a larger area, providing an increase in wilderness visitor satisfaction. However, road closures will result in decreased access for some activities. A decrease in opportunities for bicycling, off highway vehicles, and other forms of recreation requiring motorized transport or

mechanized equipment will result. Bicycle and motorized use would be displaced to other areas.

Maintenance of hiking trails and facilities will be done using hand tools only and access will be made using non-mechanized/non-motorized means. The minor amount of developed recreation use and other use associated with motor vehicles currently taking place in these areas will cease.

Research indicates there will be an increase in visitation and an increase in economic benefits resulting from tourism in the surrounding local communities. However, there will also be a reduction in economic benefits associated with the management, harvesting, manufacturing, and retail sale of timber products from the roadless areas since timber management activities would not be allowed in these areas. There will be reduced opportunities to recover commercial minerals and mineral exploration and development will be hindered.

Little or no mineral development or its associated impacts would be expected under any alternative. There are no existing federal oil or gas leases or other federal mineral leases in effect in any of the areas recommended for wilderness study. The potential for development of energy minerals and other leasable and common minerals is estimated to be low. These areas would be administratively unavailable for federal oil and gas and other federal mineral leases, pending final Congressional action. These areas are not available for mineral materials for commercial purposes. Administrative use of mineral materials is allowed, but use and impacts would be extremely low.

Educational opportunities for the scientific study of natural ecological processes will increase in alternatives that increase wilderness or wilderness study.

The naturalness, uniqueness, and representative ecosystems of the designated areas will be maintained. Natural ecological processes will continue, including plant succession. Larger blocks of undeveloped land and reduction in open road density in areas recommended for wilderness study will favor area sensitive and disturbance sensitive species. Existing old fields, wildlife openings, and other habitat improvements for fish and wildlife would not be maintained in areas recommended for wilderness study. Early successional habitat areas will succeed to forest. New permanent wildlife openings will not be created. These factors will reduce habitat for early successional species. Fish stocking in areas recommended for wilderness study would be restricted to reestablishment or maintenance of indigenous, threatened, endangered, or native species. Species traditionally stocked before wilderness designation may be considered for stocking if species is likely to survive.

Fire management may be affected by designation of additional wilderness areas. Fire suppression of all human-caused wildfires would minimize the potential effects on wilderness values, however fires in these areas would likely become larger in size than they would under current management because of the restrictions on motorized equipment such as dozers. Under emergency situations, mechanized equipment and

motorized transport, use of helicopters, air tankers, and other aircraft may be approved by Forest Supervisors and/or Regional Forester. These actions would impact wilderness character and visitor experiences and leave evidence of humans, although rehabilitation could help to reduce those impacts afterward.

Lightning ignited fires, if allowed to burn, may benefit some types of recreation by opening up the forest, reducing fuel loading to acceptable levels, and maintaining the vegetation. There would be a short-term negative impact to air quality, visual aesthetics, and possibly, water quality.

Management ignited fires to reduce hazardous fuels can have negative results in wilderness through changes in vegetation types, impacts to wilderness visitors and experiences, water quality, and habitat within wilderness. It can, however, benefit the wilderness by reducing fuel loadings to acceptable levels such that naturally ignited fires may be returned to the wilderness or wilderness study area. Fire prevention strategies applied in the urban interface area on private land can reduce the need for management-ignited fires.

Additional effects to wilderness study areas are similar to those found in wilderness: soil compaction, vegetation loss or disturbance, non-native species, crowding and loss of solitude, deterioration of water quality from improper disposal of human waste and waste water; and loss of or threats to biological/ecological processes and biodiversity through human disturbance.

Roadless Areas Maintaining Roadless Character

Areas identified as *roadless areas maintaining roadless character* will be assigned to prescriptions that would manage in ways very similar to and have overall effects similar to those in wilderness or wilderness study. The management of these areas will strive to protect the natural process and minimize the impact of humans. No active timber management or permanent road construction is prescribed in any of the alternatives for these areas. However, sights and sounds of human's activities may increase under these prescriptions and some opportunity for solitude would be diminished due to a broader range of activities under the various prescriptions. Some recreation facilities may be constructed to enhance the visitor's experience. Management ignited fire would be used to maintain fuel loadings and mechanized equipment and motorized vehicles would be used.

Roadless Areas Not Maintaining Roadless Character

In this category, areas are made available for management allocations involving road construction and/or timber harvest. This means that changes are allowed that can make an area no longer suitable for wilderness designation or may no longer provide primitive or semi-primitive settings. This category does not necessarily commit an area to

development. Before a decision is made to build roads or harvest timber in a roadless area, a site-specific analysis must be conducted.

The roadless character in many of these areas may be diminished over time. The naturalness of these undesignated areas may be reduced by the interruption of natural ecological processes. Vegetation composition and structure may be manipulated, resulting in a greater diversity of age-classes among forest types. Opportunities for solitude and remoteness may decrease. Sights and sounds of human's activities may be more obvious. Additional roads and trails may be constructed. Noise levels and soil erosion may increase and air and water quality may decrease, but water quality will meet state and federal standards.

Roadless Area Conservation Rule

On January 12, 2001, the Roadless Area Conservation Rule (RACR) was published in the ***Federal Register*** (36 CFR 294). The Roadless Area Conservation Rule prohibited with certain exceptions, road construction and reconstruction activities; and the timber cutting, sale, or removal activities that could occur in the inventoried roadless areas (IRAs) identified in the RACR FEIS. The RACR in 36 CFR 294.12 and 294.13, identified the exceptions where road construction/reconstruction activities and timber cutting/removal activities would be allowed. The RACR had an effective date of March 13, 2001. This effective date was later delayed until May 12, 2001.

Subsequently, several groups and States filed lawsuits challenging the RACR. On July 14, 2003, the United States District Court, Wyoming District (Judge Clarence Brimmer) found the Roadless Area Conservation Rule to be in violation of the National Environmental Policy Act and the Wilderness Act, and permanently enjoined its implementation and set the rule aside. The effect of this ruling is that direction for inventoried roadless areas reverts to the direction provided in the Revised Forest Plan. However, this issue is not settled. Appeals of the Wyoming District Court decision, other litigation, new rulemaking, or new Forest Service directives could result in a change in direction for the management of inventoried roadless areas.

The management approach in this Revised Forest Plan emphasizes conservation of roadless values and characteristics in all of the inventoried roadless areas. However, Bee Cove Roadless Area and parts of Big Mountain Roadless Area (the part that is outside the Chattooga Wild and Scenic River Corridor and outside the 12A prescription) would allow timber cutting/removal activities or road construction/reconstruction activities that do not meet the intent of the RACR. (See the discussion on Issue #8 in this Record of Decision, and the section on "Roadless Area Conservation Rule" in Chapter 3 of the FEIS, for more information).

In managing the roadless areas, the Sumter National Forest will follow the management direction contained in this Revised Forest Plan and any Forest Service policy on roadless area management specified in the Forest Service directives. However, should the RACR

become effective, it will supercede this Revised Plan for those inventoried roadless areas identified in the RACR FEIS that was completed in November 2000. This would mean that those areas in the Revised Forest Plan that are identified as available for treatment, could not be treated unless they meet the exceptions in the RACR. According to 36 CFR 294.14(b), should the RACR become effective, an amendment to this Revised Forest Plan would not be needed to implement its direction.

In Alternatives A and E, all of the inventoried roadless areas except 3% of Big Mountain (on the South Carolina side of the Chattooga River) would be recommended for wilderness or would maintain their roadless characteristics. The remaining acres are allocated to 7E2 prescription that allows road construction, habitat manipulation, and some vegetation manipulation, which may not be consistent with the Roadless Rule.

In Alternatives B and G, all the inventoried roadless acres are recommended for wilderness. These areas would maintain their roadless character and would be consistent with Roadless Rule.

In Alternative I, Ellicott Rock 1 and 2 would be recommended for wilderness, and both Big Mountain and Bee Cove Roadless Areas would have their roadless characteristics maintained.

In Alternative D, Ellicott Rock 1 and 2 would be recommended for wilderness, and 97% of Big Mountain would have its roadless characteristics maintained. Three percent of Big Mountain and all of Bee Cove would be allocated to management prescriptions 4D and 10B. Prescriptions 4D and 10B would allow some road construction, habitat manipulation, and some vegetation manipulation, which may not be consistent with the Roadless Rule.

In Alternative F, all the acres in Ellicott Rock 1 and 2 would be recommended for wilderness. Ninety-seven percent of Big Mountain would have its roadless character maintained. These areas would maintain their roadless character and would be consistent with Roadless Rule. About 3% of Big Mountain would allow for timber harvest and road construction. This would not be consistent with the Roadless Rule. The acres in Bee Cove are allocated to management prescriptions 4D and 10B which allow some road construction, habitat manipulation, and some vegetation manipulation, which may not be consistent with the Roadless Rule.

Scenery

Affected Environment

Large portions of the Sumter National Forest's 364,700 acres can be seen from roads, trails, and waterways. The more scenic landscapes are generally associated with or occur adjacent to lakes, rivers, and streams, or highly developed recreation areas and national trails. Views beyond the immediate foreground are influenced by terrain as well as vegetation type and density. The Andrew Pickens Ranger District is mountainous and covered with an almost-continuous canopy of deciduous and coniferous vegetation, creating a natural-appearing landscape character. There are occasional vistas at certain points along some roads and trails. The two piedmont districts, the Long Cane and the Enoree, have rolling hills and are interspersed with private ownership. This flatter terrain has fewer vistas.

Of the seven land-use themes described in the Scenery Management System, the Sumter National Forest landscapes can be grouped predominantly into three: natural evolving, natural appearing, and rural-forested. (*Landscape Aesthetics, A Handbook for Scenery Management, Agricultural Handbook Number 701*, p. 1-3). The vast majority of the forest (approximately 359,000 acres) is characterized as natural appearing. Designated wilderness and recommended wilderness study areas (approximately 5,000 acres) are lands where ecological processes predominate and are characteristically natural evolving landscapes. Rural-forested is a very small category that includes the forest's most highly developed recreation areas, approximately 600 acres.

Landscape character is a reflection of the physical, biological, and cultural attributes in the landscape, and the beliefs, values, and attitudes that people assign to these attributes. The landscape character has its origins in and is informed by early settlement patterns and land uses that have taken place over the years. These early and continuing influences affect the attitude toward landscape uses today. It is the physical appearance and cultural context of a landscape that gives it an identity and a "sense of place."

On the Sumter National Forest, the Andrew Pickens Ranger District is located within Central Appalachian broadleaf-coniferous forest meadow province and Blue Ridge Mountain section as described by Bailey and others (1994). The landscape character of this section is characterized by the highest elevation peaks, plateaus, valleys, and coves in the eastern United States; a cool climate; swift whitewater streams and rivers; a high degree of biological diversity; and outstanding scenery that supports a wide array of recreation opportunities. Since most human habitation has been confined to the valleys and plateaus, this section is also characterized by a relatively high percentage of natural appearing, naturally evolving, and remote landscape settings, that enable the Blue Ridge to be widely recognized for its outdoor-oriented natural environment.

On the Sumter National Forest, the Long Cane and Enoree Ranger Districts are located in the southeastern mixed forest province and the Southern Appalachian piedmont section, as described by Bailey and others (1994). Moderate elevations, a moderate climate, and a moderate density of small to medium streams and some larger rivers characterize the

landscape character of this section. Since most of the area has been inhabited for centuries, and first trails and then roads were common, there are no large areas of remote landscape settings. The areas do provide good recreation opportunities such as hunting.

In the past, scenic resource management direction was determined by the visual management system (VMS). From that system, visual quality objectives (VQOs) described the degree of alteration (including vegetation manipulation) that was acceptable in the landscape. Preservation was the least altered landscape and maximum modification was the most altered. (The Sumter National Forest had no acres of maximum modification in the 1985 Forest Plan.) In 1995, the scenery management system (SMS) replaced the VMS. The scenic resource has been re-inventoried to comply with the new terminology and the new system. (See *Landscape Aesthetics, A Handbook for Scenery Management*, Agricultural Handbook Number 701). To see how the two systems relate, Table 3-98 is a crosswalk between the old system and the new.

Table 3-98. Crosswalk between VQOs (Visual Management System) and SIOs (the updated Scenery Management System)

Visual Quality Objective (VQO)	Scenic Integrity Objective (SIO)
Preservation (P)	Very High (VH)
Retention (R)	High (H)
Partial Retention (PR)	Moderate (M)
Modification or Maximum Modification (M)	Low (L) or Very Low (VL)

The current inventory (from the 1985 Forest Plan) is expressed in acres using the older VMS system (Table 3-99). In the environmental consequences section below, the acres will be expressed in the newer system, SMS.

Table 3-99. VQO Current Inventory

Visual Quality Objectives	Acreage	% of Land base
Preservation (P)	19,350	5%
Retention (R)	12,000	3%
Partial Retention (PR)	10,050	3%
Modification (M) or Maximum Modification (MM)	317,750	89%
TOTAL	359,150	100%

Special Places are specific locations and expanses in outdoor settings that have attractions and features that are identified as unique, different, distinctive, and extraordinary to people. These can be indicators of highly valued scenic places. A comprehensive inventory of constituents' special places has not been conducted on the Sumter National Forest.

Direct and Indirect Effects

The scenic resource is affected by management activities altering the appearance of what is seen in the landscape. Short-term scenic effects are usually considered in terms of degree of visual contrast with existing or adjacent conditions that result from management activity. The scenic landscape can be changed over the long-term or cumulatively by the alteration of the visual character. Management activities, which result in visual alterations inconsistent with the assigned SIO, even with mitigation, affect scenery. Management activities that have the greatest potential of affecting scenery are road construction, vegetation management, insect and disease control, special use utility rights-of-ways, and mineral extraction. Other management activities that also can effect the scenic resource at a lesser degree are threatened and endangered (T&E) species habitat management, prescribed burning, fire suppression, land exchange, old growth forest management, recreation, administrative site facility construction, and wildlife management. See Table 3-100 for SIO allocation by alternative. (For planning purposes, SIOs were established for each prescription. These range from Very High (VH-unaltered) to Low (L- moderately altered). The SIOs define the different levels of alteration affecting the visual resource that are acceptable.)

Table 3-100. SIO Acres by Alternative

	A	B	D	E	F*	G	I
Very High	15,600	16,500	14,800	16,300	20,200	42,300	15,600
High	47,800	43,400	40,600	67,600	27,000	33,000	47,500
Moderate	110,900	131,600	67,500	131,800	22,400	198,000	112,800
Low	182,700	165,500	234,100	141,300	287,400	83,700	181,100
NOT INVENTORIED (WATER, NEW OWNERSHIP, ETC.)	5,850	5,850	5,850	5,850	5,850	5,850	5,850
Total	362,850	362,850	362,850	362,850	362,850	362,850	362,850

**ALTERNATIVE F IS BASED ON THE SIO PRESCRIBED BY A CROSSWALK OF THE EXISTING ALLOCATIONS AND THE PRESCRIPTIONS. THE ACRES IN THIS TABLE EXPRESS THE SIO FOR THE PRESCRIPTIONS. SOME ALTERNATIVES HAVE AREAS THAT HAVE THE SAME SIO ASSIGNED IN EACH ALTERNATIVE. WILDERNESS AND RECOMMENDED WILDERNESS AND WILD SECTIONS OF DESIGNATED OR RECOMMENDED WILD AND SCENIC RIVERS ALWAYS HAVE A HIGH OR VERY HIGH SIO.*

Alternatives E and G have the highest acreage in SIOs Very High, High, and Moderate resulting in more protection and enhancement to the scenic resources than alternatives having fewer acres assigned to the higher SIOs. Alternatives F and D have the most acres assigned to Low SIO. Therefore, negative impacts to scenery from road construction, vegetation management, insect and disease control, special use utility rights-of-ways, and mineral extraction would be the greatest in Alternative F and D. Many of these impacts would be avoided by implementing mitigation measures.

In all alternatives there is little to no change in the landscape character themes of natural appearing and natural evolving.

All alternatives propose prescribed burning; cycles will vary. Drifting smoke and blackened vegetation and charred tree trunks would be the main negative visual effect. Visual contrast from fire line construction would also be evident. The contrast levels and duration vary with fire intensity. Blackened vegetation usually lasts a short time, but charring of trees may be evident for many years. Repetitive burning reduces overall visual diversity. It often results in loss of valued mid- and understory species such as flowering dogwood, but tends to promote herbaceous flowering species. Prescribed fire repeated over time produces stands with open understories allowing views farther into the landscape. Alternatives B and E have the most impacts from prescribed burning. Alternative G has fewer impacts from prescribed burning. Alternatives A, D, F, and I have more moderate amounts of burning. (See Appendix K, Probable Activities by Alternative.)

Insect infections and diseases can cause strong, unattractive contrasts in the landscape. Since the late 1990s, as a result of the Southern Pine Beetle infestation that killed large numbers of pines, part of the canopy has opened on both the mountain and the piedmont districts. Groups of tall, gray, defoliated stems, varying from less than an acre to more than 25 acres, eventually give way to an emerging deciduous and evergreen understory. This process is speeded by active salvage operations in areas where human health and safety is critical. Management efforts to control insect infestations and diseases can minimize or reduce effects. Control efforts that include removal of infected trees and buffer areas often appear as clearcutting to forest visitors. These impacts can occur in areas of high scenic value. Alternative G has the most risk for impacts from insects and disease. Alternatives F and D have the least risk for impacts from insects and disease. Alternatives A, B, E, and I have moderate risk. (See Appendix K, Probable Activities by Alternative.)

Utility rights-of-way (ROW) have a high potential of affecting the scenic resource for a longer duration. Cleared ROWs and utility structures contrast and may be incongruent with existing landscape. Cleared ROWs contrast in form, line, color, and texture when compared to the natural appearing landscape. Most of the alternatives have a similar number and amount of impacts from utility ROWs.

Mineral management and development activities can involve major landform alteration, as well as form, line, color, and texture contrasts, causing substantially adverse scenic impacts. Alternatives with lands that are not available for lease, have a no-surface-use stipulation, or controlled-surface-occupancy stipulation will have fewer effects on visual resources than alternatives that allow standard leasing stipulations. Alternative G has the most of these types of stipulations and Alternative F has the least.

Road construction, reconstruction, and maintenance, including rights-of-way maintenance, affect scenery. Mowing frequency and timing alters the appearance of the landscape. Road construction introduces unnatural visual elements into the landscape and causes form, line, color, and texture contrasts. Road management controls how much of the landscape is seen by having roads open or closed. Alternatives F and D have the most impacts from ROW maintenance and road construction and reconstruction. Alternatives G and B have the fewest impacts from ROW maintenance and road construction and reconstruction.

Vegetation management has the great potential to alter the landscape and impact the scenic resource. Vegetation management practices can cause long-term effects on scenery by altering landscapes through species conversion, reduction in species diversity, manipulation of the prominent age class, and alteration of opening size, location, and frequency. The potential effects may be positive or negative, depending on their consistency with the desired future condition of the landscape.

Of the management applications, even-aged management may be the most impacting. Among the even-aged regeneration methods, clear-cutting and seed-tree harvest produce the highest visual contrasts because they remove the most forest canopy and create openings. These openings would vary in their effects on scenery depending on size, shape, location, and nearness to other openings. Openings that repeat the size and general character of surrounding natural openings and the landscape character would impact scenery the least. Alternative F has the most impacts from even-aged management. Alternatives G and B have the fewest impacts from even-aged management. (See Appendix K, Probable Activities by Alternative.) Single-tree selection and group selection harvests are normally less evident because they do not cause large openings in the canopy. Uneven-aged regeneration methods can affect scenery, causing contrasts in form, line, color, and texture from slash production. Although smaller in relative acres to even-aged management, Alternative B has the most acres in uneven-aged management, and Alternative A, E, and D have the fewest. All impacts as a result of timber harvest are short-term because of rapid vegetation growth.

Site preparation activities affect scenery by exposing soil and killing other vegetation. These effects are generally short-term. Site preparation usually improves the appearance of the harvest area by removing the unmerchantable trees and most of the broken stems. Stand improvement work can affect scenery by browning the vegetation and by reducing visual variety through elimination of target species. Alternatives F, A, and D have the most impacts from site preparation activities. Alternatives G, B, E and I have the fewer

impacts from timber harvesting and site activities. (See Appendix K, Probable Activities by Alternative.)

Forestwide mid-story manipulation is common wildlife management practice. Mid-story removal (along with prescribed burning) reduces overstory diversity, often resulting in the loss of valued scenic resources such as flowering dogwoods. Mid-story removal in time produces stands with open understories allowing views into the landscape. Alternatives B, E, and I have the most impacts from mid-story removal activities. Alternatives A, D, G, and F have the fewest impacts from mid-story removal and prescribed burning activities. (See Appendix K, Probable Activities by Alternative.)

Recreation facilities are also deviations to the natural landscape that have long-term effects. Forest Service recreation facilities are designed to blend into the landscape without major visual disruption. Trail construction introduces some unnatural visual elements into the landscape and causes form, line, color, and texture contrasts. Alternatives A, E, and I have the most impacts from recreation facility and trail construction activities. Alternatives B, F, D, and G have the fewest impacts from recreation facility and trail construction activities. (See Appendix K, Probable Activities by Alternative.)

Designation of wilderness will generally cause positive effects to the scenery. Old-growth forest character will be created over time. Alternatives A, B, and G have the most acres in recommended or designated wilderness. Alternatives D, F, and I have the fewest acres in recommended or designated wilderness.

For the most part, Special Places are not affected across alternatives. However, the inventory list is not exhaustive and will change over time as more sites are inventoried. Buffers needed to protect the character of each individual special place will vary by site.

Special Areas

Affected Environment

Special area designation is to protect, and where appropriate, foster public use and enjoyment of, areas with scenic, historical, geological, botanical, zoological, paleontological, and archeological characteristics, and other characteristics of interest. Special areas may be designated administratively or may receive designation by law. Other uses are permitted in these areas to the extent that these uses are in harmony with the designation.

On the Sumter National Forest there are botanical areas, scenic areas, scenic byways, and experimental forests.

Botanical areas are lands that serve as core areas for conservation of significant elements of biological diversity. These areas perpetuate or increase existing individual plant or

animal species that are of national, regional, or state significance as identified on T/E/S lists; perpetuate plant and animal communities that are unique or uncommon at the scale of their ecological section or subsection unit; and allow for public use and enjoyment. There are several botanical areas on the Sumter National Forest (Tables 3-101 and 3-102). Since the 1985 plan, several botanical areas were assessed and were found to have the necessary values to recommend them for special area designation. These resulted from several botanical inventories on the forest, including Gaddy (1996). Table 3-101 lists the special areas found on the Sumter National Forest, and Table 3-102 lists the new areas included under Alternative I.

Scenic areas are lands that have a high level of scenic values and natural beauty. There are several scenic areas on the Sumter National Forest. They represent some of the loveliest areas on the forest in terms of visual variety and appeal. They range from whitewater river corridors to bottomland hardwoods in the piedmont. Since the 1985 plan, several scenic areas were assessed and were found to have the values necessary to recommend them for special area designation or to be enlarged. Table 3-101 lists the special areas found on the Sumter National Forest and Table 3-102 lists the new areas.

Scenic byways are lands that provide visitors with outstanding scenery of natural and cultural landscapes along a well-maintained road. These byways protect and showcase the scenic natural and cultural resources of the area. The Oscar Wigginton National Forest Scenic Byway is a 14.5-mile scenic byway that winds through the Andrew Pickens Ranger District of the Sumter National Forest along South Carolina State Highways 107 and 413.

Experimental forests are lands that provide the current and future research needs of the Southern Research Station and demonstrate common forestry practices to non-industrial private forest landowners. The Calhoun Experimental Forest has a variety of conditions that meet the research needs of the Southern Research Station. Aside from demonstration, the main need of the station currently is to maintain various age classes and conditions for future research. There is a 908-acre natural area within the experimental forest where old growth conditions will develop over time.

Table 3-101. Existing Special Areas on the Sumter National Forest

District	Special Areas	Acres*
Scenic Areas		
Andrew Pickens	Chauga	3,300
	White Rock	3,416
Long Cane	Long Cane	695
Enoree	Broad River/Henderson Island	435
Botanical Areas		
	Lee Falls	180

Andrew Pickens	Lee Falls	180
Long Cane	Turkey/Stevens Creek	12050
Forest Service Scenic Byway		
Andrew Pickens	Oscar Wiggington	14.5**
Experimental Forest		
Enoree	Calhoun	4,965

*Acreages are based on the allocations in the 1985 Sumter Forest Plan

**Units in Miles of scenic byway

Table 3-102. New Special Areas on the Sumter National Forest

District	Special Areas	Acres
Scenic Areas		
Andrew Pickens	Chauga (area enlarged)	3,459
Enoree	Sandy River	203
	Lower Rennick's Branch	40
Botanical Areas		
Andrew Pickens	Brasstown Creek and Falls	1381
	Cedar Creek Natural Area	517
	King Creek	45
	Opossum Creek	119
	Tamassee Knob and Coves/Tamassee Creek	945
Long Cane	Parson's Mountain Monadnock	135
	Post Oak Savanna	94
	Turkey/Stevens Creek	1,925

Direct and Indirect Effects

The amount of special areas allocated to the special areas prescriptions is described by alternative in Table 3-103.

Table 3-103. Special Areas (in acres) by Alternative

	A	B	D	E	F	G	I
Scenic Areas							
4F	1,284	2,328	4,978	2,341	8,642	5,711	10,020
Botanical Areas							
4D	3,931	3,171	2,917	4,410	1,557	4,953	4,399
Scenic Byway							
7A	0	0	0	0	0	0	3,044
Experimental Forest							
4G1	4,862	4,862	4,862	4,862	4,862	4,862	4,862

Scenic Areas

The acreage in scenic areas will vary somewhat across alternatives. (Table 3-103) Some scenic areas were added in all alternatives, compared to current (Alternative F). Effects of forest management on scenic areas are determined by the emphasis of the prescriptions in which they are allocated. Effects to scenic areas, even in prescriptions other than scenic areas, will be minimal given the high values placed on scenery of those areas in the scenery management system. The designation of scenic areas could bring increased recreational traffic into these areas. This dispersed recreation could have some negative impact, including trampling of vegetation, soil compaction, increased erosion, and sedimentation from trails. There is also the possibility of introduction of noxious weed species which when introduced into scenic areas, can start infestations of invasive weeds into systems of native species.

In some alternatives, some scenic areas are not designated. The effects of this may be that the unique character of areas would remain unrecognized by the public and the areas would lack special protection from normal management activities and generally, lack management designed to enhance the unique characteristics of an area. Future designation might be precluded by resource development activities such as road building or natural events, such as fire or flood.

Alternatives F and I allocate the highest number of acres to the scenic area prescription and Alternatives A, B, and E allocate the least number. Alternatives D and G allocate number of acres between the most and the least.

Botanical Areas

The acreage in botanical/zoological areas will vary somewhat across alternatives (Table 3-103).

Several botanical areas were added in all alternatives, compared to current (Alternative F). All alternatives will result in an increase in opportunities for public use and enjoyment of botanical/zoological values compared to current management. The differences in acreages among the remaining alternatives is not likely to influence the core botanical/zoological values for which they were designated, but could result in the loss of some older upland forest types. Inventories regarding the significance of communities associated with the upland areas occurring adjacent to these areas are currently lacking. Significant elements of botanical diversity, rare communities, will be managed under the rare community prescription (9F) across all alternatives, wherever they occur. Buffers will be identified in conjunction with more site-specific analysis, as needed.

The Turkey/Stevens Creek corridor remains in botanical/zoological area designation (Alternatives E, F, and G), and is expanded under these alternatives, and receives no designation in Alternative A. However, the outstandingly remarkable botanical/zoological values will be protected under all alternatives based on a forestwide standard. In Alternatives B, E, and G, the botanical/zoological areas on the Andrew Pickens are somewhat larger, and Poor Mountain is added as a botanical/zoological area. The additional acreage is in upland pine and hardwood forest, including some Table Mountain pine at Poor Mountain. The exclusion of these additional areas in the proposed forest plan is likely to decrease the value of these lands in providing for older forests in the future, and could make them more vulnerable to edge effects such as an increased opportunity for invasion by non-native invasive plant species. This effect is likely to be insignificant to the unique botanical/zoological values, since any rare communities identified in association with these areas will be managed according to the rare community prescription (9F). The Jemike Coves area will be managed through the rare community prescription under Alternative I.

The designation of botanical/zoological areas could bring increased recreational traffic into these areas. This dispersed recreation could have negative impacts on botanical/zoological areas from trampling of vegetation, soil compaction, increased erosion and sedimentation from trails, or from recreational plant collection or flower picking which could severely affect some rare species.

Alternatives A, E, and G allocate the highest number of acres to the botanical/zoological area prescription and Alternatives F and I allocate the least number.

Scenic Byways

The Oscar Wiggington Scenic Byway will be managed in a variety of prescriptions that vary across alternatives (Table 3-103). Effects of forest management on the scenic byway would vary depending on the emphasis of the prescription. The designation of a national forest scenic byway does help emphasize the management in the scenic byway corridor, regardless of the management prescription. For those prescriptions where the byway passes through, emphasis of these areas would still need to be compatible with the objectives of a national forest scenic byway designation.

Alternative I allocates the highest number of acres to the prescription for Scenic Byway corridors. The effect of this allocation is increased emphasis on the scenic quality of the corridor. There may be increased amounts of interpretation and management of spring and fall flowering trees along the road edges. Tourism might be increased with better facilities and emphasis. The remaining alternatives allocate the scenic byway to a variety of other prescriptions, including remote backcountry and wildlife management. Effects to scenic byways, even in prescriptions other than scenic byway prescriptions, will be minimal given the high scenic value of the national scenic byway designation.

Experimental Forest

Management prescriptions do not vary by alternative for the Calhoun Experimental Forest (Table 3-103). National forest research determines the management emphasis in cooperation with the Sumter National Forest. The differences between alternatives in effects to the Calhoun Experimental Forest would be negligible.

Wild and Scenic Rivers

Affected Environment

Designated Rivers – Regional Overview

The Wild and Scenic Rivers Act (Public Law 90-542: 16 USC 1271-1287, October 2, 1968) and its amendments provide for the protection of selected rivers and their immediate environments. To be eligible for designation, rivers must possess one or more outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. Designation preserves rivers in free-flowing condition, protects water quality, and protects their immediate environments for the benefit and enjoyment of present and future generations.

Most rivers are added to the National Wild and Scenic Rivers System (National System) through federal legislation, after a study of the river's eligibility and suitability for designation. The Forest Service is required to consider and evaluate rivers on lands they

manage for potential designation while preparing their broader land and resource management plans under Section 5(d)(1) of the Act.

According to the Southern Appalachian Assessment (SAA), the national forests in the Southern Appalachians were established early in the 20th century primarily to protect the headwaters of major rivers from land uses that encouraged flooding, erosion, and stream sedimentation. Some would argue that clean water for the surrounding cities is the region's most important product. The Southern Appalachians contain parts of 73 major watersheds: 29 are wholly within the SAA region, 18 have more than one-half within the region. Nine major rivers that rise in the Southern Appalachians provide drinking water to the major cities in the southeast.

Rivers and stream corridors accommodate a lot of different uses such as picnicking, fishing, day hiking and walking for pleasure, primitive camping, boating (canoeing, kayaking, rafting, tubing), swimming, and nature study. The *National Survey on Recreation and the Environment 2000* interviewed over 15,000 people to determine participation in a variety of activities. According to the results, 76.1 reported participating in boating (including rafting, kayaking and canoeing) and 20 million participated in rafting, tubing, or any other type of floating on flowing waters. Over 27 million reported fishing in cold-water streams, rivers, and lakes for trout. According to the SAA Social, Cultural, and Economic Technical Report, trends in the percentage of participation in all of these activities increased from 1972 to 1992. The largest increases in participation over the 20 years occurred in pleasure walking (34.3%), nature study (25.3%), and day hiking (16.9%).

Demand for river designation is expressed primarily through public comment and responses to agency proposals. The degree to which public input favors designation indicates the demand for a wide range of uses, activities, and resource qualities associated with river management. Although demand is closely related to the current population and the projected growth of the local area, designation would likely produce increased levels of recreation use in designated and potential corridors.

The Southern Appalachians currently have five wild and scenic rivers totaling 191.1 miles. All but 45.3 miles are managed by the national forests. Of the 145.8 miles of designated river managed by the Forest Service, 80.8 miles are classified as wild, 34 miles as scenic, and 31 miles as recreational.

Designated River on the Sumter National Forest

The Sumter National Forest has one designated wild and scenic river, the Chattooga River, which was designated on May 10, 1974, as one of the original streams in the National Wild and Scenic River System. The outstandingly remarkable values of the Chattooga River include water quality, biological/wildlife, ecological, botanical, fisheries, scenery, and recreation. It is one of the premier whitewater streams of the eastern United States. Its 57 designated miles begin in North Carolina and become the state boundary between

South Carolina (Sumter National Forest) and Georgia (Chattahoochee National Forest). The Sumter National Forest has the lead for administrative duties.

Use on the Chattooga River fluctuates each year based on the water. In higher water years, the use for both guided and self-guided use has reached as high as 89,000 people per year and in lower water years, the number can be significantly lower. Management of the guided and self-guided river use remains the same for each alternative.

Appendix H of this EIS will analyze the effects of opening all or part of the Chattooga Wild and Scenic River above Highway 28 to whitewater boating. Opening up these sections of the river to boating was an issue raised during the public involvement processes for the Sumter Forest Plan Revision and Amendment 14 of the existing Sumter Plan.

Non-Eligible/Eligible Rivers on Sumter National Forest

In previous planning efforts, rivers on the Sumter National Forest were considered for wild and scenic river eligibility. Eligible rivers from that assessment were placed in management in the forest plan that protected their outstandingly remarkable values until a suitability determination was completed. Five rivers were studied and only the Chauga River was eligible. It was placed in a scenic area and its outstandingly remarkable values are protected.

During the current planning effort, another comprehensive inventory was done. This inventory included a river identified on the National Rivers Inventory, the South Carolina Statewide River Assessment, and through public involvement. Seventeen streams or rivers on the Sumter National Forest were reviewed for potential eligibility. Of the 17, eight were found to be eligible based on their outstandingly remarkable values. Rivers/streams must possess at least one outstandingly remarkable value to be considered eligible. These streams were classified according to Section 2 of the WSR act (PL 90-542). Table 3-104 shows the rivers that were studied and found ineligible and Table 3-105 shows the rivers that were studied but found eligible.

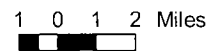
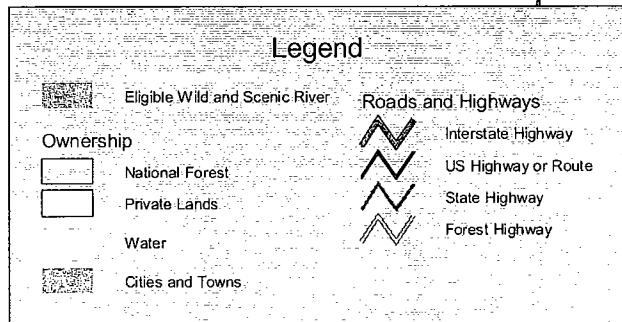
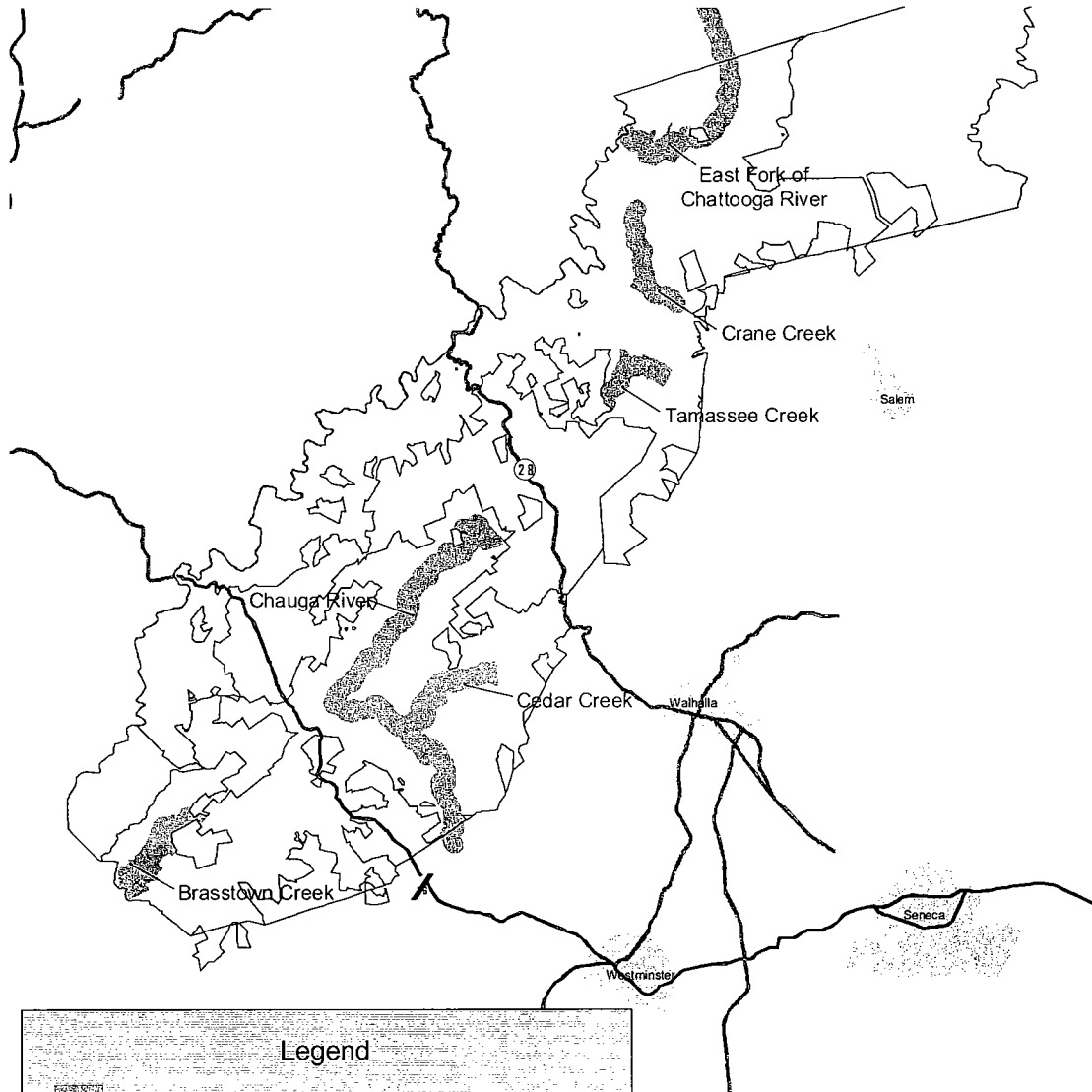
Table 3-104. Rivers Studied for National Wild and Scenic Rivers System and found Non-Eligible

District	River	Miles
Tyger	Broad River	37
	Tyger River	30.2
	Enoree River	36.7
	Fairforest Creek	9.6
Andrew Pickens	Limber Pole Creek	2.0
	King Creek	3.2
	Crooked Creek	1.3
Long Cane	Little River	6.2
	Long Cane Creek	29.2

*Table 3-105. Rivers Studied for Inclusion in National Wild and Scenic Rivers System and found **Eligible***

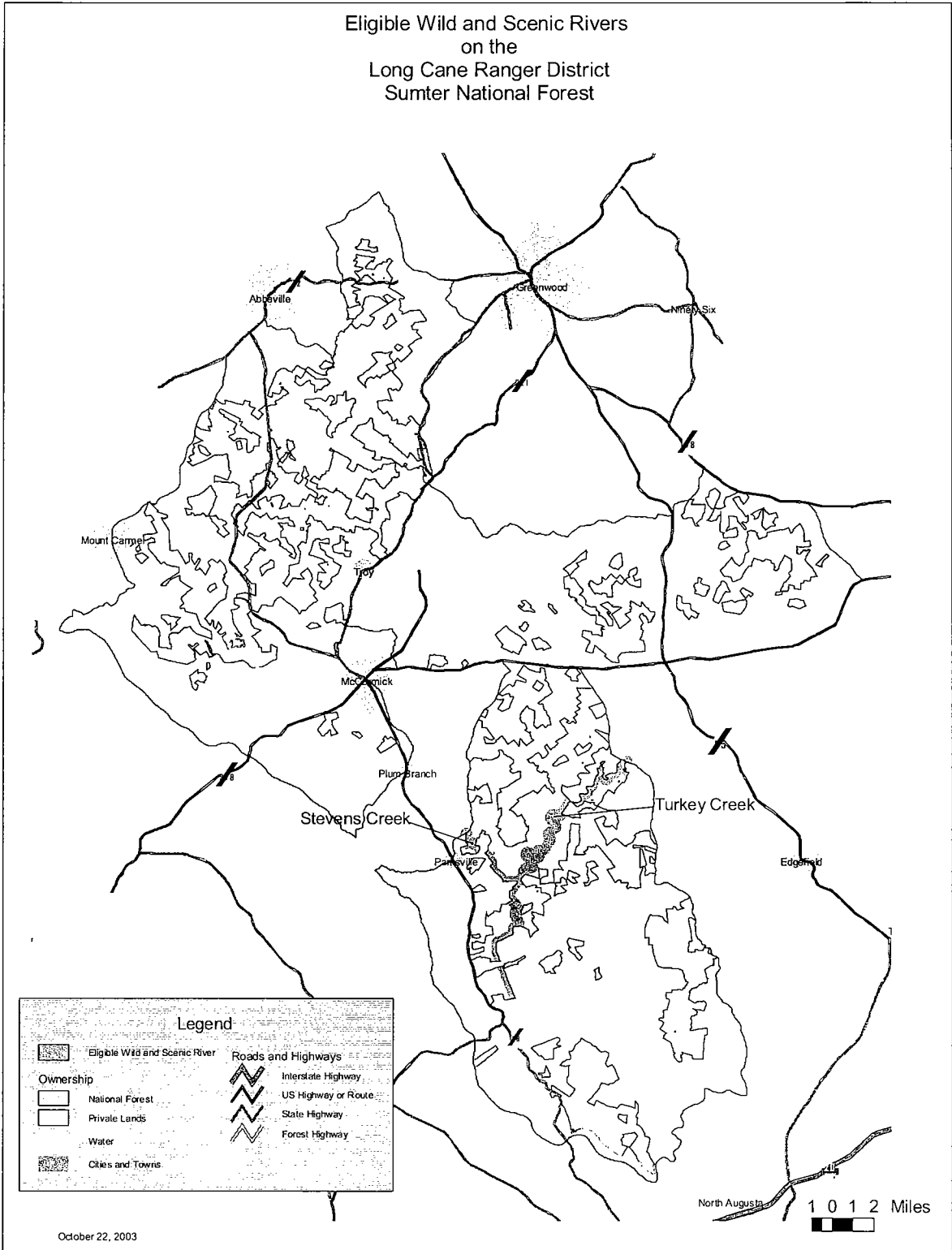
District	River	Segment	Miles	Outstandingly Remarkable Value(s)	Preliminary Classification
Long Cane	Turkey	N/A	12.5	Wildlife Fish/Aquatic Botanical/Ecological	Scenic
	Stevens	N/A	13.4	Wildlife Botanical/Ecological	Recreational
Andrew Pickens	Brasstown Creek	N/A	3.9	Botanical/Ecological	Wild
	Cedar Creek	N/A	4.2	Botanical/Ecological	Scenic
	Chauga	I	7.9	Scenic Recreation Geologic Botanical/Ecological	Scenic
		II	4.1	Scenic Recreation Geologic Botanical/Ecological	Wild
		III	4.0	Scenic Recreation Geologic Botanical/Ecological	Scenic
	Crane	N/A	3.1	Fish/Aquatic	Scenic
	East Fork, Chattooga River	I	2.5	Fish/Aquatic	Recreational
		II	2.2	Fish/Aquatic	Wild
		III	.2	Fish/Aquatic Recreation	Recreational
		IV	2.4	Fish/Aquatic Recreation Botanical/Ecological	Wild
	Tamassee Creek	N/A	1.7	Botanical/Ecological	Wild

Eligible Wild and Scenic Rivers
on the
Andrew Pickens Ranger District
Sumter National Forest



October 22, 2003

Eligible Wild and Scenic Rivers on the Long Cane Ranger District Sumter National Forest



Direct and Indirect Effects

Designated River (Chattooga River)

Please refer to Appendix H for the effects analysis related to whether or not to allow boating above Highway 28 on the Chattooga River. This appendix analyzes the effects of opening all or part of the Chattooga Wild and Scenic River above Highway 28 to whitewater boating. Opening up these sections of the river to boating was an issue raised during the public involvement processes for the Sumter Forest Plan Revision and Amendment 14 of the existing Sumter Plan.

Eligible Rivers

The identification of a river for study through the forest planning process does not trigger protection under the Act until designation by Congress. Importantly, identifying rivers as eligible, or eligible and suitable, does not create new agency authority; rather, it focuses the management actions within the discretion of the Forest Service on protecting identified river values. For eligible rivers, the preliminary (inventoried) classification is to be maintained, absent a suitability determination. The recommended classification is to be maintained throughout the duration of the forest plan. No river suitability studies are undertaken with this forest plan revision.

Under all alternatives, management emphasis for the eligible rivers and their corridors is focused on protection and enhancement of the values for which they were established, without limiting other uses that do not substantially interfere with public use and enjoyment of those values. The establishment values (outstandingly remarkable values) for the rivers on the Sumter National Forest include botanical/ecological, scenic, recreational, fisheries/aquatics and wildlife.

Effects of forest management on eligible rivers and their immediate surroundings are determined by the outstandingly remarkable values of the river, potential classifications of rivers, desired conditions of the area and existing conditions of the river.

In general, the free-flowing conditions and outstandingly remarkable values for the eligible rivers will be protected in all alternatives (for a list of the outstandingly remarkable values by river see Table 3-105). Alternatives do not vary in their potential classification of the eligible rivers (see Table 3-106).

Alternatives do vary in their allocation of the river and its immediate surroundings into different management prescriptions. Prescriptions for the river and its immediate surrounding include recommended wilderness, botanical areas, scenic areas, eligible river corridors, old-growth areas, dispersed recreation, scenic byway and high-quality timber products (See Table 3-107). These prescriptions may change the desired condition of some river corridors but would still protect or enhance the outstandingly remarkable values of the river (for a list of prescriptions by alternative see Table xx).

Effects on eligible rivers may come from management activities outside of the rivers immediate surroundings. Vegetation management, road construction, and construction or removal of recreation facilities could cause erosion along the river, visual intrusions and noise from nearby activities. Other management activities that also can affect the river resources are threatened and endangered (T&E) species habitat management, special use utility rights-of-way range management, recreation, administrative site facility construction, wildlife and fisheries management. Fire management within the area, prescribed fire and fire suppression actions, may result in smoke impacts, noise from aircraft, chainsaws, and engines, or lasting visual effects from charred vegetation. Search and rescue operations may cause some impact from the use of equipment in the river environs, but these are predicted to be minimal. Increased public interest and use may result in development of additional trailheads, trails, and access points to the river to accommodate additional public interest and use of the river. However, increased recreation use due to designation in the future may also result in more river related activities (boating, fishing, etc.) and cause localized increases in soil compaction and erosion of stream banks, and the need for limited public access. For a detailed list of probable activities by alternative see Appendix K.

Table 3-106 displays the number of miles of eligible river recommended by classification by alternative. Table 3-107 displays a list of prescriptions allocated to each river by alternative.

Table 3-106. Miles of Eligible River by Classification by Alternative

Classification	Alt. A	Alt. B	Alt. D	Alt. E	Alt. F	Alt G	Alt I
Wild	14.3	14.3	14.3	14.3	14.3	14.3	14.3
Scenic	31.7	31.7	31.7	31.7	31.7	31.7	31.7
Recreational	16.1	16.1	16.1	16.1	16.1	16.1	16.1

Table 3-107. Prescriptions Allocated to Eligible Rivers by Alternative

	Alt. A	Alt. B	Alt. D	Alt. E	Alt. F	Alt G	Alt I
Prescriptions*	1B, 2B1, 2B2, 2B3, 4D, 5C, 10B, 12A	1B, 2B1, 2B2, 2B3, 4D, 5C	1B, 2B2, 2B3, 4D, 5C, 10B	1B, 2B1, 2B2, 2B3, 4D, 5C, 12A	1B, 4D, 4F, 5C, 7E1, 8A1, 10B, 11, 12A	1B, 2B1, 4F, 6B, 6D,	1B, 4D, 4F, 5C, 7A, 7E2, 8A1, 9G2, 10B

*SEE TABLE XX FOR DESCRIPTION OF MANAGEMENT PRESCRIPTIONS

Non-eligible Rivers

Management direction for non-eligible rivers is determined by the management prescription determined in the land and resource management plan. Rivers determined as not eligible may be managed on the Sumter National Forest under a variety of management prescriptions. These prescriptions will allow a wide variety of activities within the river corridor. Management activities may include road construction, vegetation management, insect and disease control, special use utility rights-of-way, and mineral extraction. Other management activities that also can affect the river resources to a lesser degree are threatened and endangered (T&E) species habitat management, military use, range management, recreation, administrative site facility construction, and wildlife and fisheries management. See alternative maps on pages 2-9 through 2-40 for the allocation of management prescriptions.

Suitable Rivers

No eligible rivers were analyzed for their suitable traits for inclusion in the National Wild and Scenic River System. (See Appendix D for an explanation of the eligibility process.) If the suitability study is not complete, then the outstandingly remarkable values of the eligible rivers will be maintained pending the suitability determination.

Recreation Related Programs Cumulative Effects

A discussion on cumulative effects of the alternatives presented in this EIS examines how social and land use trends on public and private lands in the Southern Appalachians together influence the healthy and sound management of national forest lands.

As discussed in the FEIS sections dealing with recreation and scenery, overall demand for outdoor recreation opportunities, and the settings that provide them, is increasing and it is increasing at a rate greater than population growth.

The demand for a particular type of recreation activity remains either stable with population growth, or increases more rapidly, depending on the activity. Generally, due to the aging population, the demand for less physically challenging activities, and therefore the demands for developed or improved settings, are likely to rise faster than demands for remote and primitive settings. (*Southern Appalachian Assessment Summary Report*, p. 37.)

Trends on private lands are relevant to Forest Service lands. Currently, public holdings represent one-third of the roaded natural-appearing settings and two-thirds of remote settings in the Southern Appalachians. These are the preferred settings for outdoor recreation experiences. Due to continuing development of roads and buildings, these settings on privately owned lands are being converted to rural forested settings.

(*Southern Appalachian Assessment Social/Cultural/Economic Technical Report*, pp.140, 157, 173.) The ability for the public to recreate on private lands is changing. About one-quarter of private landholders in the Southern Appalachians provide access for the recreating public for certain compatible activities. However, overtime, less private land is predicted to be available. (*Southern Forest Resource Assessment*, draft, Chapter Socio-6, pp. 2 and 12.)

Streams, rivers, and lakes draw people because of water's importance in high quality scenery and the recreation opportunities offered. Today, national forests are seeing congestion and overuse on many of its waterways. Use is exceeding capacity and public access provided by private lands to water for recreation is diminishing.

Therefore, a general trend on private lands surrounding the Sumter National Forest is the gradual loss of preferred settings for nature based recreation as well the potential to access private lands. Private lands are not expected to increase the supply for the settings preferred by outdoor recreationists for their activities. As a result, public lands will face most of the increasing recreation demand. (*Southern Forest Resource Assessment*, draft Chapter SOCIO-6.)

Related to recreation demand are tourism and its importance to gateway communities and regional economies. Many communities are encouraging tourism, which centers on using the attractions of national forests to stimulate their local economy.

Finally, nature-based settings are key ingredients for enhancing a sense of place in the Southern Appalachian and Piedmont communities. Rapid development of private lands in the South appears to be taking away the sense of place of long-term residents. Local communities identify with landscape features or have cultural practices related to natural settings. Also, traditional uses of the land by residents for hunting, fishing, and gathering of natural forest products have transferred in part to Forest Service lands as private lands become unavailable. Some conflicts may exist or may arise between long time residents and new development related to tourism and outdoor recreation. (*Southern Appalachian Assessment Summary Report*, pg. 38.)

The primary challenge for recreation managers is how to maintain the integrity of the ecosystems and high quality natural settings as more and more people bring more impact to the natural setting and want more and more conveniences. Alternatives A, E, and I emphasize increasing some developed recreation opportunities/facilities. Alternatives B, D, F, and G emphasize other values on national forest land and therefore provide a different range of recreation opportunities.

Regardless of the alternative selected, recreation demand is increasing and effects will occur. Effects, such as user conflict and resource impacts to riparian corridors, will simply show up sooner in alternatives that do not emphasize recreation opportunities. User controls will be needed, in varying degrees, to protect the health of the natural systems and to maintain an acceptable recreation experience. These controls will begin in current problem areas.

Regardless of alternative selected, it is unknown if future Forest Service budgets will be able to support the recreation staff, law enforcement, and facilities (whether for developed or dispersed settings) called for by recreation demand. This is particularly important for high maintenance and operational cost facilities or trail systems such as OHV areas where on-going maintenance and on-the-ground personnel are needed.

For those alternatives that generally emphasize recreation management, there will be a better opportunity to maintain scarce settings, provide high quality recreation experiences, and manage impacts on the land. Also, there will be a better opportunity to develop tourism linkages and partnerships to support local economies and sound recreation management programs.

Heritage Resources

Affected Environment

Approximately 12,000 years ago American Indians first occupied the area of South Carolina that is now part of the Sumter National Forest. Historic period tribal groups known to have lived in the area include the Cherokee and the Catawba. Archeological and historical research has been used to reconstruct and interpret Native American prehistory and the advance of Euro-American settlement into the upstate of South Carolina beginning in the 18th century. Land acquisition for a national forest in South Carolina began as early as 1914 as part of the Nantahala National Forest. The Sumter National Forest was created by Presidential proclamation in 1936.

More than 3,800 heritage resource sites are recorded on the Sumter National Forest. Prehistoric period sites include campsites, villages, hunting areas, stone tool quarrying areas, and petroglyphs. Historic period sites include farm houses, outbuildings, mines, dams, mills, quarries, cemeteries, churches, Revolutionary War battlefields, pottery and lime kilns, bridges, Civilian Conservation Corp camps and World War II POW camps, CCC recreational improvements, forest fire lookout towers, and improved springs. Numerous old trails, railroad beds, and abandoned roadbeds can be found on the forest.

These remnants of past cultures remind us of the centuries-old relationship between people and the land. These heritage resources hold clues to past ecosystems, add richness and depth to our landscapes, provide links to living traditions, and may lead the forest visitor into an unforgettable encounter with history. Prehistoric and historic heritage resources are nonrenewable and the purpose of the heritage management is to protect significant heritage resources, to share their values with the forest visitor, and to contribute relevant information and perspectives to forest management.

Direct and Indirect Effects

There are a number of types of land management activities that vary in magnitude (acres or miles), but nonetheless have the potential to affect heritage resources. These include timber management, road construction, fire management, recreation use, wildlife management, landownership adjustment (land exchange), special use authorizations, structures management, and minerals management.

Management activities that involve ground disturbance or modifications have the greatest potential for direct effects to heritage resources. These activities would include, but are not limited to, any soil disturbance such as the use of heavy equipment in harvesting, grading, plowing, disking, and excavating. Soil compaction or rutting by heavy equipment would also have a direct effect. Also, any activity that alters a site's immediate or proximal setting, for example, introduction of intrusive visual or auditory components, would have a direct effect. The removal of a site from public ownership through land exchange would have an effect.

Indirect effects to heritage resources may include looting or vandalism due to increased access, and site degradation or silting of a historic property resulting from an off-site project or construction of roads or trails.

Timber harvesting has the potential to directly affect heritage resources. Timber harvesting may directly affect heritage resources when soil is significantly disturbed by heavy machinery and vehicles, when trees are felled on historic ruins or cemeteries, when logs are skidded across sites, or indirectly when erosion is caused by removal or disruption of vegetation cover or increased surface soil exposure. In general terms, even-aged harvesting may affect heritage resources located on the ground surface or at relatively shallow depths. An uneven-aged harvest or single tree selection would similarly disturb the heritage resources located on the surface and in the upper soil matrix, but disturbed areas would be dispersed within the harvest area. With either management practice, the skid trails, log loading areas, and other areas where vehicle use is concentrated would receive the greatest disturbance and thus provide the most significant direct affects to heritage properties. Indirect affects could include deterioration of sites and artifacts from subsequent erosion and increased site vandalism from increased access and surface exposure of heritage sites.

The potential maximum direct, indirect, and cumulative effects to heritage resources located on the Sumter National Forest can be assessed according to the maximum extent (acres) within which ground-disturbing activities can potentially occur for each alternative. The principal proposed ground-disturbing activities include timber, recreation, fire, wildlife, and special use management. The acreage within which potential ground-disturbance, and concomitant effects to heritage resources, can occur is presented by prescription and alternative in Appendix K.

Alternative F provides the highest potential for timber management activities to affect heritage resources of all alternatives. Accordingly, the potential for timber management

to affect heritage resources is followed, in descending order, by Alternatives I, B, D, A, E, and G.

Legally mandated inventories for heritage resources would be conducted prior to timber harvest and subsequent site preparation under all alternatives. On the Sumter National Forest, site preparation following timber harvest, or vegetation management performed apart from timber harvest, is usually performed with the aid of heavy equipment. Site preparation activities, therefore, can result in significant direct, indirect, or cumulative effects to archaeological sites.

New road construction may directly affect heritage resources, given variables specific to each portion of construction. Disturbance within a construction corridor may remove soil containing cultural deposits, depending on the local situation. In cases where fill is added, archaeological sites may be buried deeper. This may protect the site from compaction or rutting, while at the same time essentially precluding additional scientific study using conventional archaeological techniques. Maintenance or reconstruction of existing roads presents less potential for direct effects to intact archeological sites because the majority of damage to an archaeological site probably occurred during the original construction. Access to heritage resources provided by roads, however, may result in indirect effects to significant properties by facilitating increased visitation and possibility of vandalism. Indirect effects also may include erosion of archaeological sites subsequent to road construction. Also, artifact exposure during construction could promote site vandalism.

The potential effects of road construction to heritage resources would be determined by the amount of acreage for timber management, recreation development, and other resource management activities proposed for each alternative. Accordingly, it can be projected that those alternatives that provide for the greatest number of activities over the largest area will have the greatest potential to affect heritage resources.

Heritage resources may be directly and indirectly affected by heat damage to artifacts and sites and erosion of sites resulting from wildfires or prescribed fires. High-temperature wildfire could pose direct effects to heritage resources by damaging surface or shallow archeological sites, standing structures, and cemetery markers. Sites of the historic period are most subject to direct effects from these events because many of these properties are more likely to exhibit surface artifacts. Studies show that wildfire and, in some cases higher temperature prescribed burns, may alter the character and condition of surface artifacts such as melting glass, "crazing" lithic and ceramic artifacts, and burning wood structures. Prescribed fire could similarly directly affect surface sites or very shallow site deposits and artifacts, but because of reduced temperature, to a much lesser degree than wildfire. However, wooden structures and cemetery markers could still be damaged, as could surface artifacts.

Fire lines, whether for wildfires or prescribed burns, could directly affect heritage resources. Fire lines constructed using either a bulldozer pulling a fire plow or using the front blade to push or scrape a line affect archaeological sites by physically displacing artifacts or damaging or destroying subsurface features. Fire line construction may

truncate the site by removing the upper portion while leaving the lower portion of the site relatively undisturbed. When multiple parallel fire lines are used for wildfire control, it would be possible to disturb or even destroy a large portion of a small site. Fire lines established using a disc harrow would have less impact than those made with a tractor plow or dozer blade. In these cases, lateral soil displacement would be minimal, but some fragile surface artifacts or artifacts and features located in shallow deposits may be broken or destroyed. Fire lines installed for prescribed burns are less likely to directly or indirectly affect heritage resources since proposed fire lines in areas of prescribed burns are inventoried for heritage resources prior to project implementation. However, heritage surveys usually do not precede emergency fire line construction. Thus, there is a high potential for heritage resources to be affected by activities associated with wildfire suppression. Indirect effects following the installation of fire lines and burning may include erosion losses due to the removal or burning of vegetation cover or further deterioration of artifact or feature condition following damage by high temperatures.

All of the alternatives propose to use prescribed burning and, therefore, have a potential to affect cultural resources. Alternative G, which proposes the fewest acres for prescribed burning, provides the least potential for a prescribed burning program to affect heritage resources of all alternatives. Alternatives E and B present the largest program of annual prescribed burning of all alternatives, and have the highest potential to affect heritage resources of all alternatives.

Recreation management may be one of three types: concentrated (formal recreation areas), dispersed recreation areas, and trails (off road vehicle trails, horse trails, and foot trails). In general, direct effects to cultural resources can result from construction of recreation facilities and expansion of recreation facilities and recreational areas. Indirect effects could include soil erosion and compaction of heritage resources due to visitor use, and access given to locales could result in archeological site vandalism. These indirect effects could especially occur with illegal expansions off established off-road vehicle trails.

The incidence of vandalism and illicit collection is very much influenced by visitor use. Greater visitor use to some areas will lead to the increase of vandalism, illicit collection, littering, and disturbance to cultural sites under all alternatives. Opening areas to timber production and timber manipulation, recreation use, and construction of roads and trails will result in an increase in site disturbance and vandalism in previously inaccessible areas that were previously naturally protected from direct, indirect, and cumulative effects. While heritage resources situated in recreation areas and along designated trails and road corridors can be signed, monitored, and patrolled, the impacts outside of these areas are largely uncontrolled and the extent of impact unknown. However, the Forest Service does have the authority to close a specific road, trail, or area that has considerable adverse effects to cultural resources (36 CFR 295.5, 36 CFR 800.9, and 43 CFR 8342) and prosecute, under 36 CFR 296.4 and other laws, those who willfully destroy or loot heritage resources.

All of the alternatives propose similar increases in the construction and maintenance of trails and facilities. Therefore, all of the alternatives have a potential to directly affect heritage resources during construction and maintenance and indirectly through the increase in forest users.

Exchange of federal land containing significant heritage resources to a non-federal agency or private ownership is considered a direct effect with no indirect or cumulative effects. This is because protection under federal laws and regulations would no longer apply to the heritage resources contained within a tract that is exchanged out of federal ownership.

Analysis of effects to significant cultural resources located on lands to be exchanged out of Forest Service ownership is performed programmatically in compliance with existing laws and regulations, for example 36 CFR 296, 800, and the Memorandum of Understanding (MOU) with the South Carolina State Historic Preservation Officer (SHPO), and occurs on a case-by-case basis apart from alternatives. As such, effects to heritage resources resulting from land exchanged out of federal jurisdiction are not affected by alternative.

Special use authorizations allow the use of national forest land by other agencies, individuals, organizations, or corporations. Direct effects to heritage resources located in special use areas may result from the activities of the permit holder. Limitations may be imposed upon special use permits for the purposes of resource protection. Indirect effects to heritage resources located in special use areas can occur through erosion and vandalism of heritage resources resulting from increased access and use of permit areas.

Analysis of effects to heritage resources located on lands placed under special use permit is performed programmatically in compliance with existing laws and regulations (36 CFR 296, 800, and the MOU with the SC SHPO) and occurs on a case-by-case basis apart from alternatives. As such, effects to heritage resources resulting from special use permits are not affected by alternative.

Historic mining facilities, mines, tailings, and exploration ditches determined to be historically significant are protected and maintained under existing federal laws and regulations. Generally, activities associated with the exploration for minerals have the potential to directly affect heritage resources. Mineral extraction may produce severe, albeit localized, direct effects to cultural resources as the overburden containing historic resources are removed. Indirect effects could include damage to cultural resources located outside the area of immediate mining resulting from erosion, the installation of road accesses and equipment staging areas, and vandalism and looting resulting from increased access to these heritage resources.

Analysis of effects of minerals management to cultural resources is performed programmatically in compliance with existing laws and regulations (e.g., 36 CFR 296, 800, and the MOU with the South Carolina SHPO) and occurs on a case-by-case basis

separate from alternatives. Therefore, effects to heritage resources resulting from minerals management are not affected by alternative.

Structures located on the Sumter National Forest that are determined to be historically significant are protected and maintained under the terms and conditions of existing federal laws and regulations. The construction of new facilities or the maintenance of older structures and facilities could directly affect heritage resources. In most cases of concrete slab or footing construction, disturbance may extend into or below soil strata containing archeological deposits. Lighter facilities, such as boardwalks, piers, or structures located on pier foundations would present less potential for damage. The construction of structures could also directly affect heritage resources by introducing a visual affect that conflicts with or diminishes the setting and nature of an historic property. Maintenance of historic structures such as old work centers, picnic shelters, and fire lookouts could have direct effects on the historic property if not carried out in a manner compatible with the historic structure. Indirect effects could include erosion or vandalism of heritage resources facilitated by public access following construction of structures in the immediate vicinity.

Analysis of effects to historic structures, and the effects of the construction and maintenance of structures to heritage resources, is performed programmatically in compliance with existing laws and regulations (e.g., 36 CFR 296, 800, and the MOU with the South Carolina SHPO). As such, effects to heritage resources resulting from facilities construction and maintenance would be similar for each alternative

Areas in which wildlife food plots are traditionally installed are areas of high probability for containing heritage resources. The construction of new wildlife food plots has the greatest potential to directly affect heritage resources. To convert a forested area into an open field, heavy equipment may be used to clear trees and underbrush and to remove stumps. Maintenance of wildlife fields through a program of disking may directly affect cultural properties as well. Indirect effects could include vandalism of heritage resources located in wildlife plots by exposing sites to collection and looting.

The construction of new wildlife openings is proposed in all alternatives except Alternative G. The direct effects to heritage resources would be greatest in Alternative E, followed by Alternative F, then B, then Alternatives A, D, and I. Alternative G would have no effect on heritage resources. Maintenance of the existing system of wildlife plots is proposed for all of the alternatives and the effects to heritage resources would be similar for all alternatives.

Cumulative Effects

All of the proposed land management activities vary in magnitude and intensity, but nonetheless have the potential to affect heritage resources. Cumulatively, the repeated implementation of activities including timber management, road construction, fire management, recreation use, wildlife management, landownership adjustment (land

exchange), special use authorizations, structures management, and minerals management, could, over time, result in the degradation of heritage resources and a reduction in the number of intact heritage resources.

The degree of cumulative effects to heritage resources from all management activities could be greatly reduced through the implementation of heritage inventory, assessment, protection, and mitigation measures prior to the initiation of these management activities. Processes and actions not associated with land management activities, such as erosion, natural weathering, wildfire or other natural process, could affect heritage resources, too. Cumulative effects from illegal activities, primarily vandalism, may occur on certain sites unless actions are taken to prevent or discourage such activities through vigorous law enforcement and a program of public awareness concerning the nature of heritage resources on public lands.

Forest Products

Affected Environment

Nationally, the projected demand for wood products is expected to increase (RPA Timber Assessment, April 1, 2002). By the year 2050, U.S. consumption of forest products is projected to increase by 40%. This increased demand would be met by:

1. An increase in U.S. timber harvest of 23%.
2. An increase in log, chip, and product imports of 85%.
3. An increase in use of recovered paper of 85%.

With a near term economic recession, U.S. roundwood harvest is projected to decrease in the short-term, then increase.

Forest industry is a major contributor to South Carolina's economy, having the third highest payroll and contributing \$3.4 billion value added in 1997.

The primary wood products offered for sale from the Sumter National Forest are pine sawtimber and pulpwood. During the 1960s through the 1980s, average annual sale volumes were typically in the range of 10-15 MMCF. Table 3-108 displays the volume sold from 1986-2001. The first full year of implementation was 1986 for the previous Sumter Land and Resource Management Plan.